VOL. 161 — NO. 11

SEPTEMBER 9, 1961

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

The traffic aspect of WATS was just one of 18 items on the agenda of USITA Traffic Committee and Bell System conference held Aug. 22-24 in New York City. Photo identification, agenda, p. 46.

Circulation This Issue
14,400 of Which
13,875 Is Paid

MANAGEMENT · PLANT · TRAFFIC · COMMERCIAL · LEGAL · ACCOUNTING

32 reasons why customers prefer the new Stromberg-Carlson® F-50 PBX

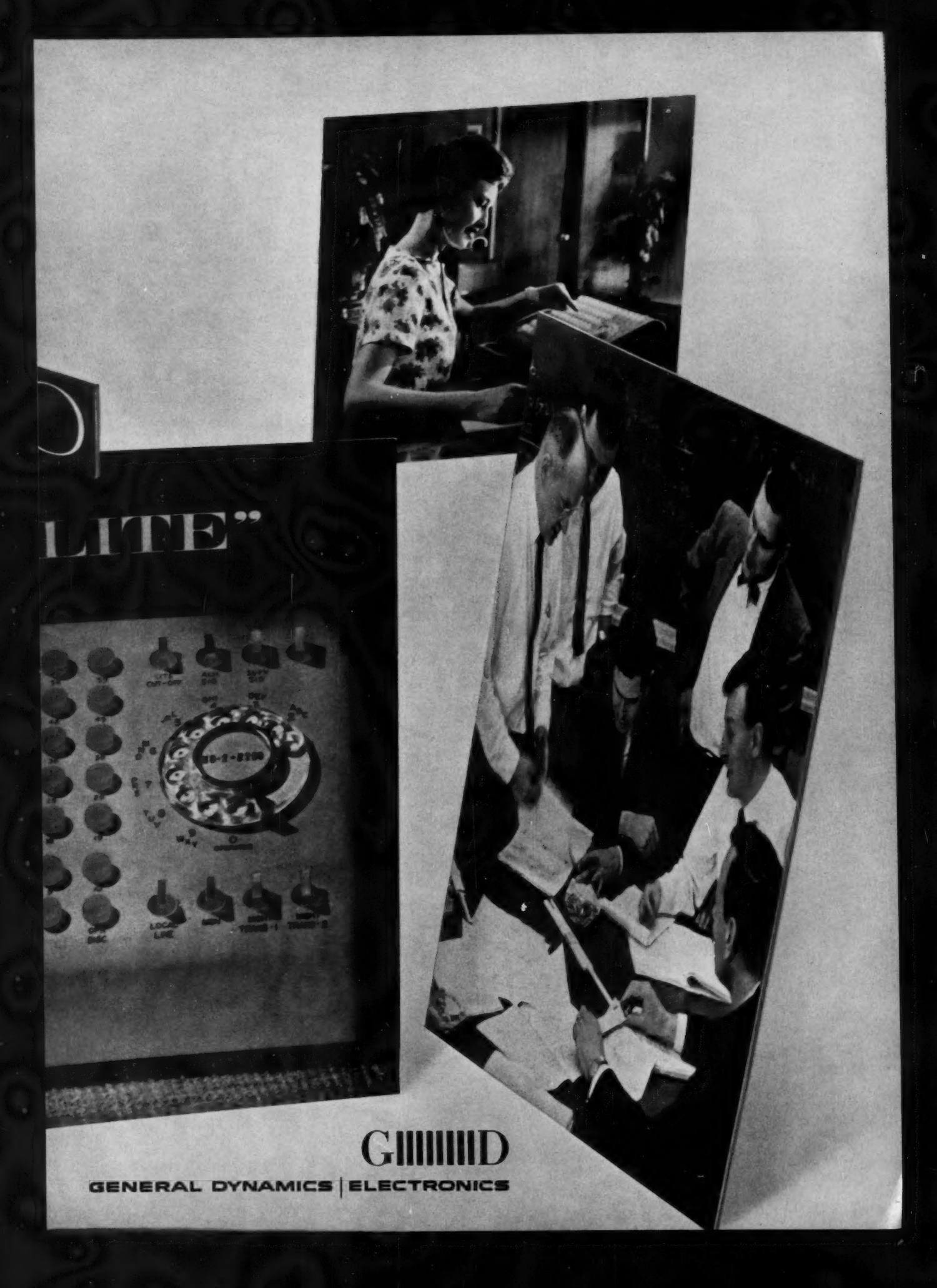
Reason No. 1: the exclusive TOUCH-LITE® Turret

PBX operators helped design it! They wanted a turret that would make their work easier, faster, more efficient. The "Touch-Lite" turret is what they asked for.

Calls are completed, transferred or supervised by a featherlight touch on keys *that light up.* System design permits maximum individual station control and speed of service with minimum effort. The "Touch-Lite" turret is a compact, low-profile, easy-to-use, easy-to-service unit. Handsome cabinet measures 9″ x 15″ x 5″. Comes in tasteful two-tone beige, green or gray. System capacity is 50 lines, 10 trunks, 6 links.

FOR THE OTHER 31 REASONS why commercial subscribers prefer this new, modern, dial PBX, ask your Stromberg-Carlson representative. He has literature, prices, ordering information and delivery dates, too.

In Atlanta, call 875-7467; Chicago: STate 2-4235; San Francisco: OXford 7-3630; Kansas City: HArrison 1-6618; Rochester: HUbbard 2-2200.


LITE"
GENERAL DYNAMICS | ELECTRONICS

FLASHES AND PLUGS

STYMIED, AT LAST. Telephone managers who remember the damage done to poles by energetic woodpeckers will chuckle over this. A Milwaukee, Wis. electric customer called up the other day to report something strange going on at the power company's transformer.

"Your transformer on a pole at the rear of our house is making drumming sounds about every 20 seconds," he reported.

Power trouble-shooters were dispatched, and found the drummer to be—who else?—a confused and frustrated woodpecker, who was making no progress at all!

•

SEAL CONTRACT 50 YEARS AFTER. The northern California area of Pacific Telephone & Telegraph Co. reported in *Panorama* on July 17 that:

Fifty-one years ago, Cliff Ritchie placed the most important telephone call of his life.

Recently, at Sacramento's El Dorado Hotel, he re-enacted that call. The occasion was the 50th wedding anniversary of Cliff and Martha Ritchie, and the telephone call was his marriage proposal.

Just as he did in 1910 when he was an entertainer at a Monte Rio resort hotel, Ritchie, now an assistant sergeant-at-arms for the state legislature, sang his long distance proposal.

His rendition of "You Are the Ideal of My Dreams" brought a standing ovation from the more than 200 people attending the anniversary party.

To make things more realistic, the Ritchies sang to each other "over" old fashioned up-right telephones provided by Vance Oliveau, Sacramento district unit manager, and Mrs. Marjorie Lang, service representative.

The Ritchies are an old time show business family. Mrs. Ritchie was also a popular night club performer for many years, and their son, Cliff Jr., followed them into show business as a singer.

•

LINEMAN'S TENT A "HIDEOUT"? Buddy, son of a neighbor of Bill and Dorothy Smith of Mehlville, Mo., is telephone-conditioned in a way slightly different from that of most youngsters.

Mrs. Smith, whose husband is a switchman for the Southwestern Bell Telephone Co., contributed to the SW Bell *News* a poem straight out of four-year-old Buddy's imagination:

Hide And Seek

"Buddy sneaked in and whispered
"As quiet as a mouse,
" 'Could I please climb the pole and hide
" 'In the telephone man's tree house?' "

CHANGE OF ADDRESS

Please notify your local postmaster and the Circulation Department of TELEPHONY of change of address. Change cannot be made without the old as well as the new address. Allow three weeks for change of address to become effective.

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

1901 — 60 years — 1961

September 9, 1961

CONTENTS

IN THE NATION'S CAPITAL 19
By Lawrence J. Hogan

JOINT TELEPHONE AND POWER BURIED CONSTRUCTION 22
By Ray Blain

TAKING THE PBX PEG COUNT 25
By Gilbert R. Brackett

MIND YOUR OWN BUSINESS 30
By Ted Pollock

THE PLANT MAN'S NOTEBOOK 36
By Ray Blain

COURTS AND COMMISSIONS 40

HELPFUL LITERATURE 54

H. D. FARGO JR., *President and Director of Advertising* • A. J. STULTS, *Vice President and Advertising Manager* • R. C. RENO, *Vice President and Editor* • DAN S. FARGO, *Vice President and Managing Editor* • DIANNE P. DRUCKER, *Associate Editor* • HELEN HARDIN, *Associate Editor* • LAWRENCE J. HOGAN, *Washington Editor* • RAY BLAIN, *Technical Editorial Director* • PAUL E. MURPHY, *Electronics Editor* • MAYME WORKMAN, *Traffic Editor* • VIVIAN RYDEN, *Circulation Manager.*

VAC **Circulation Audited and Verified (direct from auditor to subscriber) By Verified Audit Circulation Co.**

Published every week on Saturday by TELEPHONY PUBLISHING CORP., 608 S. Dearborn St., Chicago 5, Ill. Entered as second class matter at the Post Office at Chicago, Ill., under the act of Mar. 3, 1879. 50c per copy (except special issues—50c). Subscription $4.50, 1-year; $7.00, 2-years; $9.00, 3-years. Add $1.00 per year for postage to Canada and Pan American countries; $2.00 per year to Foreign countries. Telephone WAbash 2-2435.

There's a lot more to the NEW FLOTROL RECTIFIERS than silicon diodes!

Lorain has not just designed for silicon diodes. The idea of improving on the already established, reliable, selenium-rectifier FLOTROL units beyond the mere incorporation of silicon diodes was a challenge to our engineers. In accepting this challenge an entirely new approach, both mechanical and electrical, was in order. From this work a radically new unit having improved physical and mechanical features and having highly advantageous, new electrical characteristics has been developed.

FROM THE PHYSICAL AND MECHANICAL STANDPOINT THE NEW UNITS ARE OUTSTANDING

The attractive appearance speaks for itself.

All operating controls, operating alarm lamps and breaker switches are placed at a single, convenient location—on the meter panel at the front of the unit.

All terminations are convenient, safe and adequate—for utmost simplicity of installation.

Component location and cabinet design have both been carefully considered—all components are readily and conveniently reached by the mere removal of a cover. Both plug-in and hinged mounting of components are utilized—the new FLOTROL rectifiers are the ultimate in accessibility for service.

ELECTRICALLY, THE NEW MODELS ARE SUPERIOR

TRANSFORMER TAP SIMPLIFICATION—screwdriver shaft adjustment takes care of the entire range of output voltage—transformer taps are used only for line voltage adjustment.

FAIL-SAFE—batteries and office equipment are protected against any type of failure. The unit shuts off or the output voltage drops upon failure in the circuit.

SOMETHING NEW IN ALARMS—in all three-phase and large single-phase units, the auxiliary circuits are individually alarmed with alarm-type magnetic circuit breakers adapted to operate the office alarm as well as the alarm lamp on the meter panel. Upon tripping of any of the critical circuit breakers the rectifier is automatically shut down.

THE RADICALLY NEW CIRCUITRY results in reduction in the size of the units—improved performance—protection of the silicon diodes against starting and load surges—frequency compensation—load sharing paralleling with other FLOTROLS and with motor-generator sets—temperature compensation for operation up to 55° C. ambient.

As usual in Lorain design, all components are conservatively rated for maximum dependability.

MANY MODELS—ALL COMPACT AND RELIABLE

THREE TYPES
- CHARGERS
- ELIMINATORS
- CHARGER-ELIMINATORS

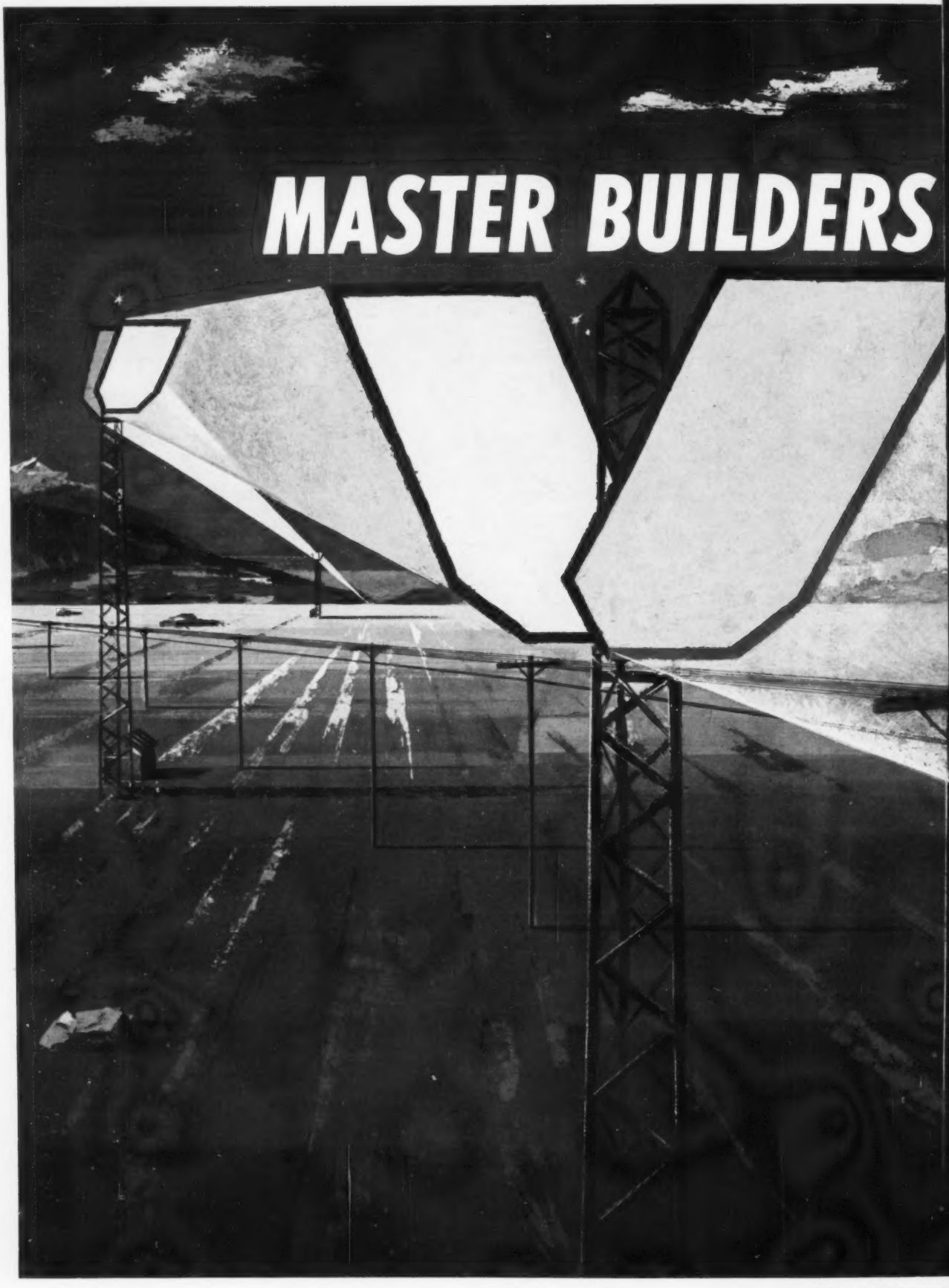
- **25, 50, 140 AND 260 VOLTS**
- **2 TO 400 AMPERE CAPACITY**
- **SINGLE PHASE AND THREE PHASE**
- **FLOOR, RACK AND WALL MOUNTED**

LORAIN EQUIPMENT IS ALSO MADE IN CANADA, BY CANADIANS, FOR CANADIANS

LORAIN *Products Corporation* LORAIN, OHIO

LORAIN PRODUCTS (CANADA) LTD.—ST. THOMAS, ONTARIO

DESIGNERS AND MANUFACTURERS
SUB-CYCLE® CONVERTERS
FLOTROL® RECTIFIERS
PARTNERS IN DEPENDABILITY


MASTER BUILDERS

OF SUPERHIGHWAYS

with 99.99% traffic reliability

It's no secret in the telephone industry that Lenkurt Electric traditionally exercises rigid engineering disciplines in the design of microwave and carrier equipment—and imposes unusually high *system* reliability standards on all Lenkurt engineered microwave systems.

For instance, the reliability standard for Lenkurt microwave systems is 99.99%.

As another example, the present frequency stability of Lenkurt microwave exceeds the FCC's recommendation for 1965.

Any telephone company with an eye to the future can draw some interesting conclusions from these two examples:

Where performance requirements are highest, the cost of Lenkurt equipment is lowest.

Where life expectancy and reliability are measured in decades—as Lenkurt microwave and carrier systems are—your original investment in Lenkurt equipment produces the greatest returns.

For complete information and detailed specifications, contact the Lenkurt Electric office nearest you.

Lenkurt Electric Co., Inc., San Carlos, California. Offices in Atlanta, Chicago, Dallas, Minneapolis, New York and San Carlos.

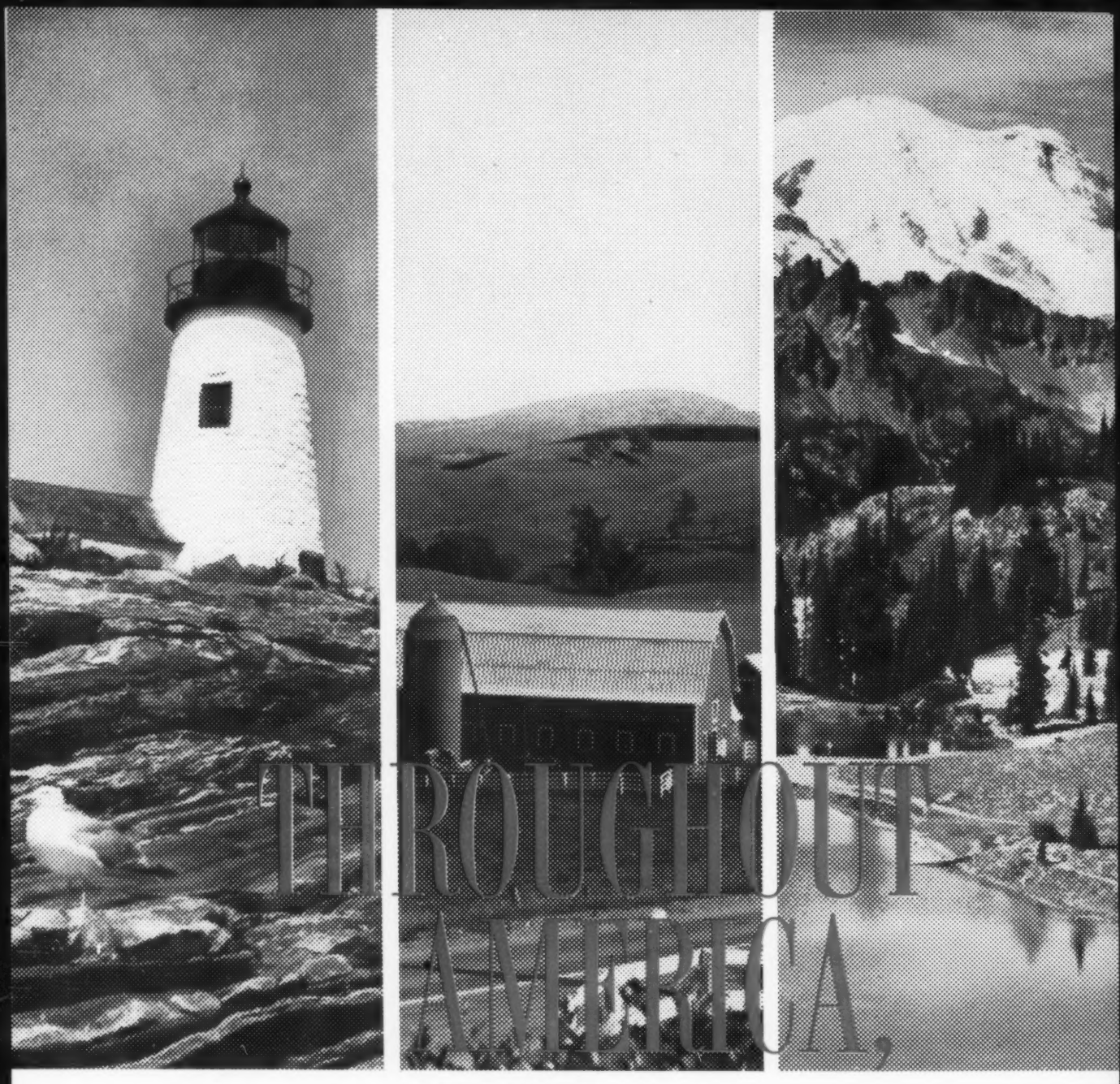
LENKURT ELECTRIC

SUBSIDIARY OF

GENERAL TELEPHONE & ELECTRONICS

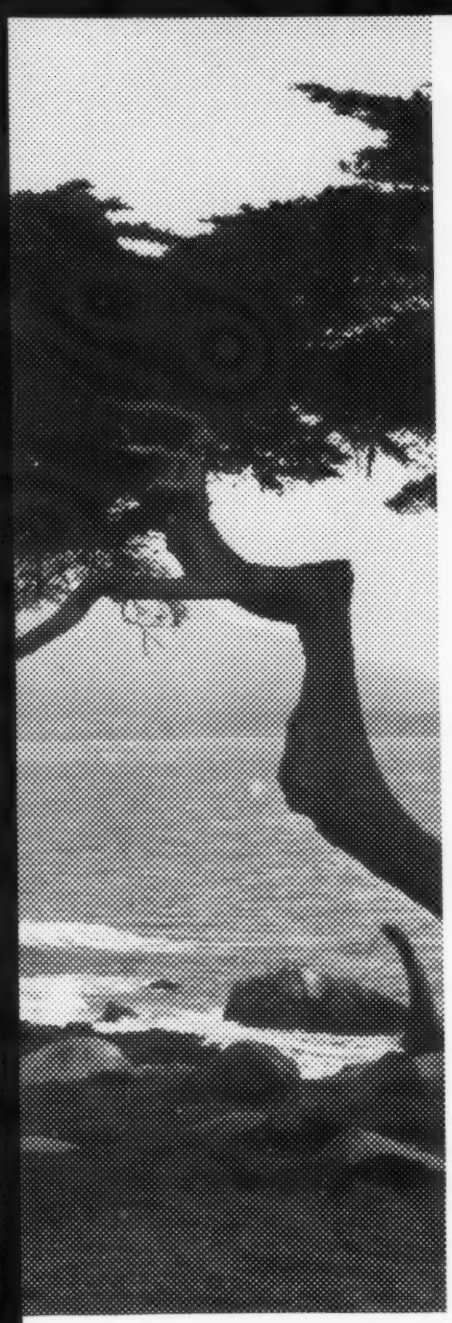
GENERAL SYSTEM

Specialists in VIDEO, VOICE and DATA TRANSMISSION



THROUGHOUT AMERICA,

ONE TELEPHONE STANDS OUT



The K-500 – tested and requested by more independents than *any* other subscriber unit. The standard setter of the industry, in both design and performance.

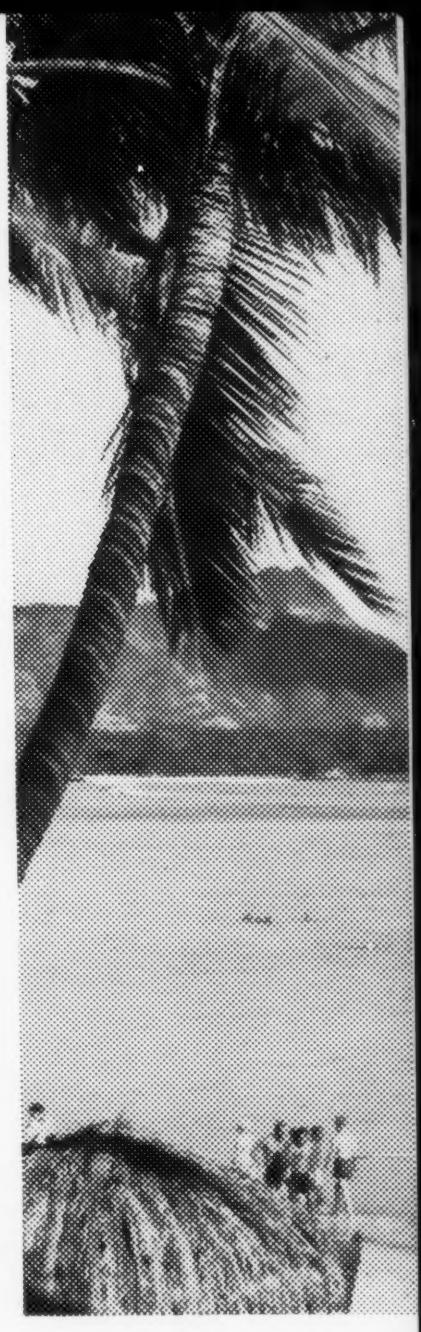
Call ITT Kellogg–your source for the famous K-500 instrument, in both table and wall models, in black, white and nine attractive colors.

Another ITT Kellogg Exclusive!

3 complete Sell-A-Phone promotions . . .

help sell *more home subscriber services!*

Choose the promotion, or promotions, that best suit your company. Get everything you need to promote extension phones, color and other revenue-building "deluxe" home services.



ITT KELLOGG

A Division of
International Telephone & Telegraph Corporation
6650 South Cicero Avenue, Chicago 38, Illinois

Telephone Department
Danville Road, Corinth, Mississippi

Regional Offices and Warehouses:
CALIFORNIA: 23 Broderick Road, Burlingame, California, OXford 7-5780.
GEORGIA: 1594 Southland Circle, N.W., Atlanta 18, Ga., SYcamore 4-2441.
INDIANA: 802 Knitters Ave., Fort Wayne, Indiana, Eastbrook 4562.
IOWA: 1111 East River Drive, Davenport, Iowa, 324-0441.
KANSAS: 7th and Sunshine Road, Kansas City 15, Kansas, MAyfair 1-4418.
NEW YORK: 309 Wavel Street, East Syracuse, N.Y., HEmpstead 7-2511.
NEW YORK CITY: 22 Thames Street, New York 6, BOwling Green 9-3800.
TEXAS: 1359 Motor St., Dallas 7, Texas, RIverside 7-5191.

ITT Kellogg products available in Canada
through Standard Telephones & Cables Mfg. Co. Ltd.
9600 St. Lawrence Boulevard, Montreal 12, P.Q., Canada

Boost Your Profits With
LEICH PABX's

It's Here! Leich's

LEICH GENERAL SYSTEM
Subsidiary of
GENERAL TELEPHONE & ELECTRONICS

"Extra-Service" 80A-S PABX

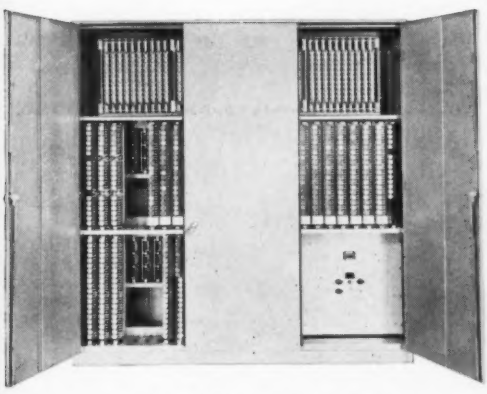
Now—you can give your subscribers the "extra service" of Leich's popular 40A PABX in an 80-line stock board.

With Leich's new 80A-S PABX, inside, outgoing, and city trunk transfer calls are made without help from the attendant. Even consultation-conference service is a standard feature at no extra cost. Regular dial telephones without special buttons or equipment are used.

A modern keyset turret keeps incoming traffic moving. By simply depressing three keyset buttons in sequence, the turret attendant extends incoming calls quickly and easily.

All-relay Leich Dial System assures worry-free service, saves space.

Boost your profits with Leich PABX's. Write today for complete information.



COMPACT SWITCHBOARD BAY IS 72 INCHES WIDE, 15 INCHES DEEP, AND 72 INCHES HIGH.

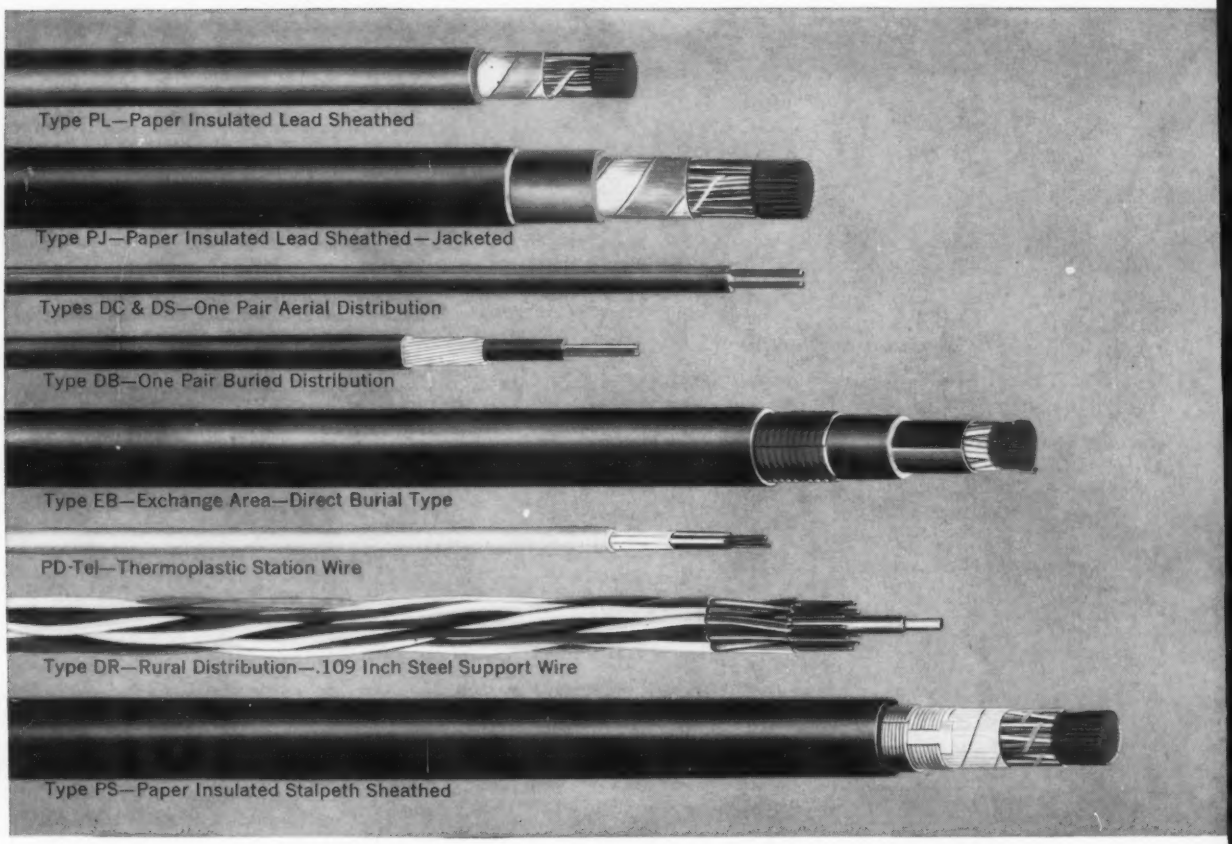
26-TRUNK KEYSET TURRET KEEPS INCOMING TRAFFIC MOVING.

LEICH SALES CORPORATION • 427 WEST RANDOLPH STREET • CHICAGO 6, ILLINOIS

PACIFIC COAST: 11401 W. PICO BLVD., LOS ANGELES 64, CAL.
EAST: 3651 CONNECTICUT AVENUE, YOUNGSTOWN, OHIO
SOUTHWEST: 1227 SLOCUM STREET, DALLAS 7, TEXAS
SOUTHEAST: 5126 SOUTH LOIS ST., TAMPA 11, FLORIDA • 2915 W. MOORE ST., RICHMOND, VA.

manufacturers of telephones, switchboards and related apparatus since 1907

PRODUCT DEPENDABILITY IN EVERY PHELPS DODGE


Type PL—Paper Insulated Lead Sheathed
Type PJ—Paper Insulated Lead Sheathed—Jacketed
Types DC & DS—One Pair Aerial Distribution
Type DB—One Pair Buried Distribution
Type EB—Exchange Area—Direct Burial Type
PD-Tel—Thermoplastic Station Wire
Type DR—Rural Distribution—.109 Inch Steel Support Wire
Type PS—Paper Insulated Stalpeth Sheathed

Throughout the manufacture of Phelps Dodge telephone wire and cable, product dependability is given major attention.

Phelps Dodge builds reliability into every cable by using the finest materials and by applying years of experience in the research and development of communications cables to control the quality of these materials during fabrication. The result is a complete line of wire and cable with assured dependability that helps reduce maintenance costs and provide longer service life.

Phelps Dodge will gladly help you select the correct construction to fit your particular requirements. Just call your nearest Phelps Dodge sales office.

IS THE FIRST CONSIDERATION TELEPHONE WIRE AND CABLE!

Type IN—Interior Cable
Type PA—Paper Insulated Lead Sheathed—Armored
PD-Tel—Paralleled Figure 8 Drop Wire
PD-Tel—Polyethylene Insulated Bridle Wire
Type EA—Exchange Area—Aerial Type
Type RL—Rubber Insulated Lead Sheathed
Type ED—Exchange Area—Duct Type
PD-Tel—Paralleled Reinforced Drop Wire

PHELPS DODGE COPPER PRODUCTS
CORPORATION
300 Park Avenue, New York 22, N.Y.

MINE TO MARKET

SALES OFFICES: Atlanta, Birmingham, Ala., Cambridge, Mass., Charlotte, Chicago, Cincinnati, Cleveland, Dallas, Dayton, Denver, Des Moines, Detroit, Fort Wayne, Honolulu, Houston, Indianapolis, Jacksonville, Kansas City, Mo., Los Angeles, Memphis, Milwaukee, Minneapolis, New Orleans, New York, Philadelphia, Pittsburgh, Portland, Ore., Richmond, Rochester, N. Y., San Francisco, St. Louis, Seattle, Tampa, Washington, D. C.

Area Codes

Magic numbers for the telephone industry

Operating economy for you. Convenience for your customers. With Area Codes, and the more recent development of All-Number Calling, every telephone company will be able to expand to meet the soaring demands for new service in the coming years.

But, as with any change in service as dramatic as this, customers need to be told about Area Codes and encouraged to use them.

The Bell System advertisement across the page will help do this. It is appearing right now in magazines that reach nearly every customer in America.

Of course, one advertisement is just a starting point. To gain the greatest profit from Area Codes you must promote them heavily to your customers.

Many Independent and Bell System companies are doing this in these four ways:

1. Educating customers on the benefits of Area Codes in print and broadcast advertising.
2. Giving customers Area Code stickers for their telephones.
3. Making Area Codes of distant points easily available to customers.
4. Encouraging customers to tell the Long Distance Operator the Area Code of distant points they wish to call.

Promotion like this will pay off for your company, too.

BELL
TELEPHONE
SYSTEM

New for you—a more useful telephone number!

You may already have a telephone number like this. If you don't, here's how it will look.

The first three digits are your Area Code. They tell the telephone system what part of the country you live in. The next three digits designate your particular telephone office, and the last four pinpoint your particular phone.

It's *your* phone number. Unique. Not another like it anywhere.

This new kind of number helps others reach you—and helps you reach others—faster.

Area Codes here now—All-Number Calling on the rise

Today the majority of our customers already dial their Long Distance calls directly by means of Area Codes. Eventually everyone will be able to. Until then, if you call through the Operator, you can save time by giving her the Area Code of the telephone you are calling when it is different from yours.

And already, in many parts of the country, letters have been replaced by numerals in telephone numbers. Before this change, we were running out of usable telephone numbers containing letters, while phones were steadily increasing. All-Number Calling, however, will give us enough numbers to meet our needs into the next century.

Telephone progress like this benefits everyone. Your new personal telephone number is another step in our effort to anticipate the needs of a growing America.

BELL TELEPHONE SYSTEM

All-Number Calling may permit you to use simple, tiny number-buttons on portable phones of the future.

If it's in the ground...
HURRICANE WINDS CAN'T TOUCH IT!

No matter what the weather . . .

SUPERIOR BURIED PLANT

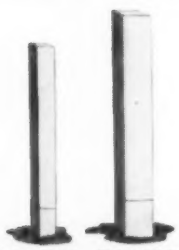
is your best insurance against interrupted service

PCP

TEL-CS

SUBMARINE

DB


TERMINAL PEDESTALS
(Wire and Cable)

There's a SUPERIOR product for direct burial installation to meet the requirements of any plant.

All cable types feature black, high molecular weight polyethylene jackets, color-coded high molecular weight polyethylene conductor insulation, non-hygroscopic binder tapes and corrugated copper or aluminum shields.

Sequential foot-marking is available on outer jackets, if desired. Also, cables can be shipped under pressure.

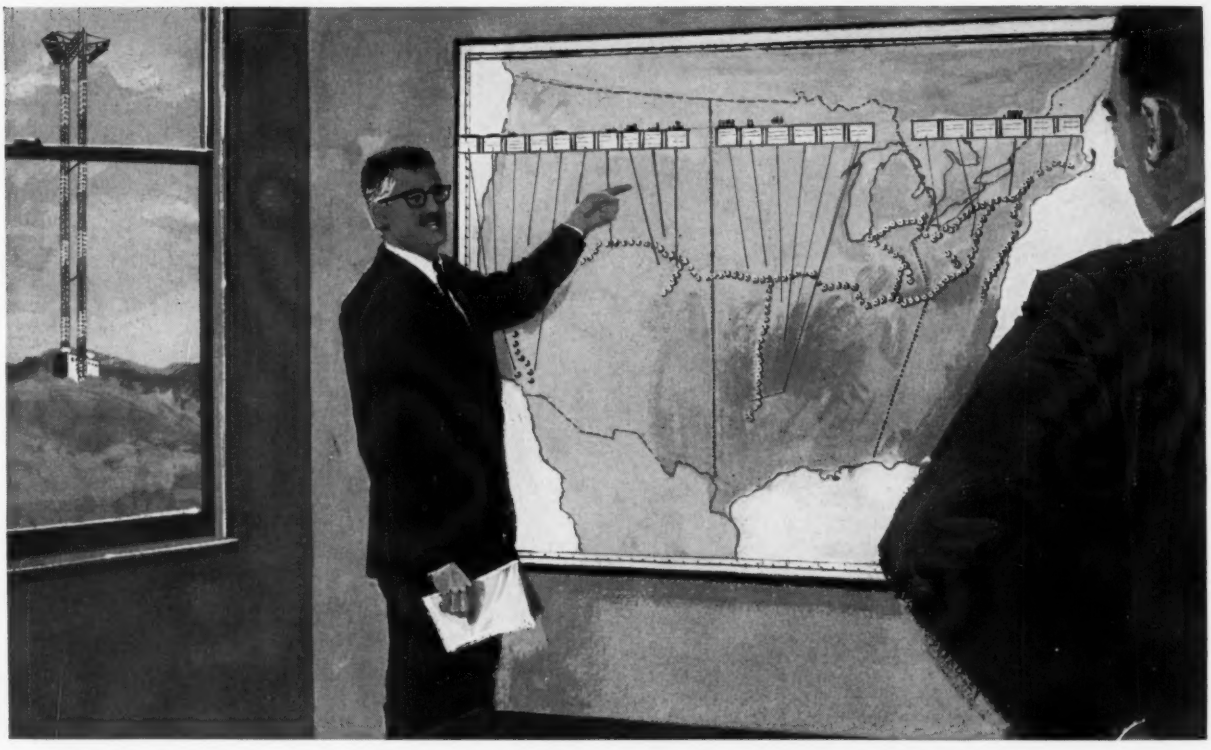
Protect your outside plant against hurricane winds with SUPERIOR Direct Burial wires and cables . . . you'll find it pays off in efficiency and economy!

Write for full information to

SUPERIOR CABLE

SUPERIOR CABLE CORPORATION, HICKORY, NORTH CAROLINA

5615



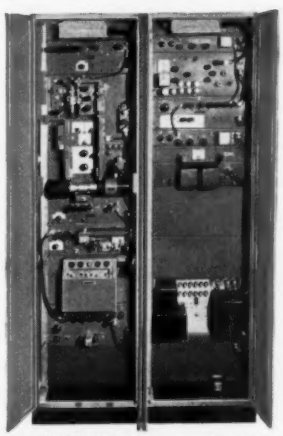
Introducing the RCA MM-600 Microwave for high density, long-haul systems

New RCA MM-600 Microwave Equipment has been designed to meet the exacting transmission requirements of Common Carriers. Operating in the microwave band of 5925-6425 mc, it will carry 600 voice channels or an equivalent video signal for distances in excess of 3000 miles.

This new equipment will be used by Western Union Telegraph Company for their new Transcontinental Microwave System consisting of over 200 stations. This gigantic communications complex will provide facilities for data handling, facsimile, telegraph, television and other services.

The MM-600 meets or exceeds the CCIR/CCITT performance standards for International telephone and TV services. A controlled baseband spectrum up to 10 mc is available for other video applications. Standard r-f channel allocations fully coordinate with the Bell TH system and other allocations can be provided to meet individual requirements. Baseband combiners and switches are available to provide either diversity or fall-back circuit protection. Service Channel and Supervisory Equipment is engineered to meet individual system requirements. Continuous status reports from each station are transmitted to the control stations by a computer type code of high security.

The MM-600 uses a conservatively chosen combination of solid state and vacuum tube devices to insure top performance and long-term stability. A newly developed traveling wave tube using a replaceable glass envelope is used in the transmitters for long life and low replacement cost.



New RCA MM-600 Microwave Equipment

Send for complete information on this important product that combines RCA reliability and high capacity long-haul communications.

RCA

The Most Trusted Name in Electronics

RADIO CORPORATION OF AMERICA

RADIO CORPORATION OF AMERICA
Microwave Equipment, Dept. ZB-189
Building 15-5, Camden 2, N. J.

☐ Please send me data sheet on RCA MM-600.

NAME _____ TITLE _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

Electron Microscope magnifies particles of battery raw material 16,000 times, increases understanding of physical properties—gives improved Gould battery performance.

Analyzing nature of impurities in battery material—one of many special projects carried on by Gould-National technicians to increase the life of Gould batteries.

Gould-National Battery Research Center in Minneapolis, Minn., and quality control facilities at Kankakee, Ill., and Trenton, N.J. assure you that only the highest quality is built into Gould batteries.

Tensile Test Unit studies tensile and compressive strengths and percentage of elongation of various materials—used to develop stronger containers for Gould batteries.

Quantitative Analysis Unit determines percentage of element concentration in metal samples. Currently used in study to eliminate self-discharge rate of lead-acid batteries.

BATTERY RESEARCH . . . 24 HOUR JOB AT GOULD-NATIONAL

At the Gould-National Battery Research Center around-the-clock testing produces a continuous stream of new ideas. Here, creative research minds and the latest scientific equipment combine to assure you of batteries designed and engineered to meet today's most exacting requirements . . . and to anticipate the answers for tomorrow's standby power needs. Gould stationary batteries are available in Plante, Calcium and Kathanode types. Complete stocks and service facilities are located across the country.

CHARGERS—A full line of specially engineered stationary charging equipment available: float, filtered and unfiltered. Ask about the new FLOAT-O-MATIC charger.

Write for detailed information, or call your local Gould office listed in the Yellow Pages under "Batteries, Industrial." Sales offices and agents in continental United States and overseas.

NEW Gould Rechargeable Flashlight and Lantern Batteries

Of nickel-cadmium construction, these batteries can be recharged to full capacity over 250 times . . . and each cycle gives 50% more continuous, bright light than ordinary cells. Ask for free literature.

More Power to you from GOULD

GOULD-NATIONAL GN BATTERIES, INC.

INDUSTRIAL BATTERY DIVISION

GOULD-NATIONAL BATTERIES, INC.

St. Paul 1, Minnesota

IN THE NATION'S CAPITAL

BY LAWRENCE J. HOGAN, WASHINGTON EDITOR

35 congressional liberals send letter to President Kennedy opposing private ownership of satellite communications. Stevenson asks U.N. to study formation of laws governing use of space. Telephone service plays big part in Senate gambling investigation. BDSA issues growth reports for communications industries.

AS REPORTED in this department previously (See Aug. 19 issue) a group of Capitol Hill liberals got together a few weeks ago for a meeting presided over by Rep. Emanuel Celler (D., N.Y.) to plot strategy for scuttling the administration's private ownership satellite communications program. The reason given for calling the meeting was that the base of participation in the 10-company consortium set up by FCC should be broadened to include domestic carriers as well as international carriers. As we reported, however, most of those in attendance were opposed to the private ownership concept itself. Following the meeting, the lawmakers were undecided just what course of action they should take. It was suggested a letter of protest be sent to the White House. They felt that if they sent such a letter, it would be closely studied by President Kennedy and Vice President Johnson.

Now they have sent such a letter — signed by 35 Democratic congressmen.

The letter said in part:

"In effect, AT&T would be the chosen instrument of the United States Government to own and control civilian space communications. This would be intolerable from the standpoint of the public interest. . . . Only by insisting upon the widest participation by all interested communications and aerospace manufacturers and operators can there be any hope that such a monopoly can be forestalled in this new and vital field."

They suggested—and here's the joker in the deck—that the government retain ownership for the time being and handle all the contracting for the building and operation of the system. The five-page letter suggested to President Kennedy: That no decisions be made concerning ultimate control of the system until it is in operation; that no contracts, decisions or acts which may affect the decision on ownership be agreed to until the system is operational; that Congress be consulted on the ownership question and allowed to exercise its constitutional responsibility to supervise activities of federal agencies regulating commerce; that all "interested parties" be consulted fully about the ownership problem and that during this period all questions relating to international agreement, cooperation and ownership affecting other nations be thoroughly explored.

Most of the letter's signers are committed to the government ownership approach. All are Democrats. Their demands for broader participation are designed to roadblock the whole program until Kennedy can be swayed away from the free enterprise approach. A "TVA in Space" is their aim.

This letter is very important and its ramifications will be extensive. Kennedy can't afford to alienate 35 of his staunchest friends on Capitol Hill, even if they do generally play out in left field positions. They're the front line troops in his efforts to push his other proposals into law.

Take a long close look at the roster of congressional signatures: Estes Kefauver (Tenn.), chairman of the Senate Anti-trust Sub-committee; Emanuel Celler (N. Y.), chairman of the House Judiciary Committee; Sen. Hubert H. Humphrey (Minn.); Sen. Wayne Morse (Ore.); Reps. Joseph P. Addabbo, Leonard Farbstein, Lester Holtzman, Eugene J. Keogh, Abraham J. Multer and William Fitts Ryan, (all of New York); Jeffrey Cohelan, Chet Holifield, Clem Miller, John E. Moss, James Roosevelt, John F. Shelley and B. F. Sisk, (all of California); Edward F. Boland, James A. Burke and Thomas J. Lane (all of Massachusetts); James A. Byrne, Elmer J. Holland and Herman Toll (all of Pennsylvania); Thomas L. Ashley (Ohio); Merwin Coad (Iowa); Kenneth J. Gray (Ill.); Frank Kowalski (Conn.); Richard E. Lankford (Md.); Roland V. Libonati (Ill.); Joseph M. Montoya (N. M.); M. Blaine Peterson (Utah); Robert W. Kastenmeier and Henry S. Reuss (both of Wisconsin); Ralph J. Rivers (Alaska), and Al Ullman (Ore.)

Stevenson Asks UN Space Laws

After the criticism by some scientists leveled at the government's plan to thread the sky with copper needles for space microwave radio communications. Adlai Stevenson called upon the United Nations to launch a study for the formulation of laws governing the use of space.

With Moon shots, U-2 flights, communications space satellites, "spies in the skies," and satellites to probe a variety of things, the time is ripe for such a study to determine the rights of nations and individuals in outer space.

(One of these days Santa Claus will know what it's like to commute on a Los Angeles freeway during the rush hour.)

The government's plan calls for an Air Force satellite to eject 75 pounds of copper wire particles in its wake, spreading a trail 24 miles wide and five miles deep girdling the earth 2,000 miles in space.

Gambling Probe Important

In the pre-"Untouchables" era, one of the top television crime shows was the probe conducted a few years ago by Sen. Estes Kefauver and his Racket Squa------er, Rackets Sub-committee.

Senator McClellan, chairman of the Senate Investigations Sub-committee, has an interesting show of his own in production these days, starring the nation's top gamblers and he wanted to have it televised as a summer replacement. In fact, he wrote an article for "TV Guide" extolling the merits of such a show and its value to viewers. But, exercising a sponsor's prerogative, the full committee rejected the idea.

It's just as well.

Many housewives would no doubt have switched from their day-time soap operas to watch the sub-committee's hearings with dire consequences. Some of the witnesses who paraded before the inquisitive senators revealed some startling trade secrets for cheating at cards. There's no telling how much havoc might have been wrought on the neighborhood bridge circuit if the ladies were exposed to this kind of intelligence.

Since a bookie without a telephone is like a racing sulky without a horse, the McClellan hearings, as one would guess, hold a great deal of import for the telephone industry.

Judge Goodman A. Sarachan, chairman of the New York State Crime Commission, told the sub-committee the public has a completely false picture of the bookmaker as a small businessman taking small bets from people who lack the time or money to go to the race tracks. Actually, he said, the bookmaker is "a cheat and a fraud, and through the various levels of the professional gambling industry he is furnishing billions of dollars for the illegal and dangerous activities of the organized criminal syndicates." He advocated:

(1) Clarification of the laws on wiretap evidence because effective prosecution of gambling laws is virtually impossible without the use of legal wiretaps.

(2) A federal law to prohibit dissemination of news from a racetrack for an hour before a race begins and at least a half hour after the race ends to reduce the volume of the bookmaker's business.

(3) A ban on extending to gamblers a new telephone service by which the telephone company charges a flat fee for unlimited long distance calls without any record being made of the toll charges. Judge Sarachan said nearly every important gambling case requires telephone toll tickets as evidence.

Obviously referring to the Senate-passed bill making it illegal to use wire communications for interstate gambling, McClellan asked what would happen if telephone service were not available to gamblers.

Myles J. Lane, a member of the N. Y. commission and a former United States attorney, said the gamblers would be crippled without the telephone.

The sub-committee heard testimony that swift telephone access to racing information is a lifeline of the big-time, big-money business of running handbooks.

Without swift service, the bookmaker is at the mercy of anyone who can contrive faster communication and be in

REA Approves Three Loans

New or improved telephone service to 5,668 subscribers will be provided with the aid of three loans approved during the week of Aug. 28 by the Rural Electrification Administration as follows:

The Craw-Kan Telephone Cooperative Association, Girard, Kan.; $1,115,000; Aug. 21.

This loan will help to improve service for 1,043 subscribers and to furnish initial service to 607 subscribers. The borrower proposes to acquire the following companies which now provide magneto service to the existing subscribers: Galesburg Rural Telephone Co.; Urbana Telephone Co.; South Mound Mutual Telephone Co.; and the Cherokee County Mutual Telephone Association which consists of seven exchanges serving the rural regions around Columbus.

The cooperative proposes to acquire the sites and construct new dial central offices at Crestline, Galesburg, Hallowell and one in the rural area near Columbus. REA loans to the Craw-Kan cooperative will aid it to bring new and improved service to 7,733 subscribers. Sixteen of the proposed 21 exchanges now furnish dial service to approximately 5,075 subscribers.

•

Cuming County Telephone Co., Wisner, Neb.; $1,360,000; Aug. 25.

Funds will assist in improving service for 2,851 subscribers and in furnishing initial service to 378 subscribers. The borrower proposes to acquire with loan and its own funds, the Hamilton County Telephone Co., Aurora. The acquired system now serves the existing subscribers through dial exchanges at Hampton, Hordville, Stockham and Trumbull, and manual exchanges at Aurora, Doniphan, Giltner, Marquette and Phillips.

A new dial-commercial building will be constructed at Aurora to serve the whole system. New dial central offices will replace the Doniphan, Giltner, Marquette and Phillips manual exchange facilities, and new and larger dial facilities will be installed in the existing Stockham building. The Hampton, Hordville and Trumbull dial exchanges will be retained in place. The new Aurora building also will house toll facilities and automatic ticketing equipment for the nine exchanges.

REA loans to this borrower will help it to bring new and improved service to 4,825 subscribers. The system will consist of 11 exchanges.

•

Eastex Telephone Cooperative, Henderson, Tex.; $600,000; Aug. 25.

This loan will aid in serving 789 new subscribers, providing a higher grade of service for existing subscribers, and completing the authorized system.

The borrower proposes to expand central office equipment in the present service area to serve 643 of the new subscribers. In addition, it plans to extend its operating area into Shelby county, and construct a new dial central office at Huxley to serve the remaining 146 new subscribers. The Huxley area is presently without telephone service.

REA loans to the Eastex Cooperative will help make possible new and improved service to 4,503 subscribers. Sixteen of the proposed 18 exchanges now furnish dial service to approximately 3,100 subscribers.

position to lay down bets on horses which already have won.

The sub-committee received in evidence a map prepared by the Internal Revenue Service showing a flow of telephone calls to and from known gamblers in the United States and Canada.

An internal revenue service agent, said he did not know the nature of the calls, but had established they were between gamblers. He named Boston as one of the centers from which known gamblers made frequent calls to gamblers in several other cities in the United States and in Montreal and Toronto.

Mortimer M. Caplin, head of the Internal Revenue Service, said the government is losing 4.9 billion dollars in taxes every year and gamblers figure largely among the cheaters.

The senators were told by one witness that the long distance pay telephones in gambler Angelo Rossetti's Boston office were so busy that the telephone company had to empty the coin boxes every other day.

An investigator said Rossetti told him the pay telephones were used for long distance calls. Telephone company records were introduced indicating that $13,191 in coins were collected from the two telephones in 1960, and $7,855 in the first six months of 1961.

Rossetti was quoted as saying a telephone company man came around every other day to remove the coins so the telephones would not become clogged.

Rossetti invoked the Fifth Amendment, and refused to say whether he runs a big horse race telephone wire service from Boston to Montreal in the north and Miami in the South.

Rossetti sat impassively as sub-committee counsel, Jerome Adlerman, traced on a map a wire service network running from Boston to Montreal, Manchester, N. H.; Lawrence, Mass.; Providence, R. I.; Philadelphia; Wilmington, Del.; Atlantic City, N. J.; Baltimore, and Miami. Offshoots were shown running to Worcester, Mass.; Hartford, Conn.; Pottsville, Pa.; Steubenville and Cincinnati, Ohio, and New Orleans.

Through a series of questions which Rossetti refused to answer, Adlerman sought to show the witness was operating the race wire service known as PHR News Service, in the absence of the real owner, Frank Ferrara, who is in prison.

It will be sometime before all the numbers slips, marked cards, scratch sheets and brass knuckles are swept out of the way, but when they are, and new legislation is drafted—five will get you ten that the telephone industry will be affected.

Recent Quotations of Telephone Stock

	8/31/61 BID	8/31/61 ASKED	8/4/61 BID	8/4/61 ASKED	Current Indicated Dividend Rate
Anglo-Canadian Tel. Co.	43¼	45¼	44½	46½	$1.20
British Columbia Tel. Co.	46½	48	48½	50½	2.20
California Interstate Tel. Co.	24	25¾	22¼	23¾	.70
California Pacific Utilities Co.	23	24½	24½	26½	.90
California Water & Tel. Co.	37¾	39	39¾	41	1.36
Carolina Tel. & Tel. Co.	47	49	47	49	1.60
Central Tel. Co.	27¾	29½	28	30	.88 + Stk.
Chenango & Unadilla Tel. Corp.	28¼ Bid		27½ Bid		1.35
Cincinnati & Subn. Bell Tel. Co.	110½	113½	108¾	111	4.50
Citizens Utility Co. "A"	29	30½	26¾	28¾	Stock Div.
Citizens Utility Co. "B"	26¼	27¾	24½	26½	.60
Commonwealth Tel. Co.	25½	27	25½	27¼	1.00
Florida Tel. Corp. Class A	27¼	29¼	28	30	1.00
General Tel. & Elec. Corp. Common	25⅜ Last Sale		25⅜ Last Sale		.76
Hawaiian Tel. Co.	19¼	20¼	18⅞	19⅞	.54
Independent Tel. Corp.	12 Last Sale		9	10	——
Indiana Tel. Corp.	36 Bid		37 Bid		——
Inter-County Tel. & Tel. Co.	26¼	27¾	27¼	29	.72 + Stk.
Inter-Mountain Tel. Co.	20½	21½	20½	22	.80
Jamestown Tel. Corp.	90 Bid		90 Bid		6.00
Lincoln Tel. & Tel. Co.	67 Bid		66½ Bid		2.60
Lorain Tel. Corp.	36 Bid		36 Bid		1.40 + Stk.
Middle States Tel. Co. of Ill.	32	34	35½	37½	.92
North Carolina Tel. Co.	1¼	1¾	1⅛	1⅝	——
Northern Ohio Tel. Co.	60	63	54 Bid		2.00
Peoples Tel. Co.	22 Bid		21 Bid		.80
Pioneer Tel. Co.	36 Bid		36 Bid		1.00 + Stk.
Rochester Tel. Co.	28¾ Last Sale		28 Last Sale		1.00
Southeastern Tel. Co.	25	27	24	26	1.00
Southern Nevada Tel. Co.	40	43	43	45½	1.20
Southern New England Tel. Co.	53	54½	50½	52	2.20
Southwestern States Tel. Co.	31¼	32¼	30¼	31½	1.28
Tel. Service Co. of O., Class A	28	30	25	27½	.36 + Stk.
Tidewater Tel. Co.	27 Bid		27 Bid		1.40
United Utilities, Inc.	26⅝	28	24¾	25¾	.80
Western Carolina Tel. Co.	12	13	12	13	.43
West Coast Tel. Co.	34	35¼	33½	34½	1.36
Western Light & Tel. Co., Inc.	30¼	31¾	30½	32	1.20
Western Utility Corp.	12¼	13¼	12⅝	13⅝	.40

Telephone Outlook Bright

The number of telephones in the United States continues to increase, according to a report issued by the Business and Defense Services Administration of the U. S. Department of Commerce. The net increase in 1961 is expected to approximate 2.5 million, bringing the total number to approximately 76.8 million by the end of the year, compared with the 75,357,000 in use on June 30, 1961.

The pickup in general business conditions is being reflected in the growth of the number of telephones. This rate of growth during the first half of 1961 is one million or about 60 per cent of the growth during the same period of 1960.

Toll calls, a barometer of business conditions, continued to increase.

Following are population and telephone statistics for the period 1957-1960, based on industry reports:

Year	*Population*	*Tels.*	*Tels. Per 100 Pop.*
1957	171,000,000	63,621,000	37.20
1958	174,680,000	66,630,000	38.20
1959	177,500,000	70,558,000	39.75
1960	181,500,000	74,300,000	40.83
1961(est.)	185,500,000	76,800,000	41.40

Construction expenditures by the telephone industry during 1960 surpassed earlier estimates by almost a quarter billion dollars, and will probably continue to hold at the 3 billion dollar mark in 1961. For the past five years, the industry spent the following amounts according to the Bureau of the Census (in millions):

Year	*Bldgs.*	*Outside Plant**	*All Other***	*Total*
1956	$235	$825	$1,500	$2,560
1957	250	812	1,875	2,937
1958	190	709	1,635	2,534
1959	185	758	1,690	2,633
1960	229	850	2,033	3,112
1961(est.)	—	—	—	3,000

*Pole lines, underground and aerial plant, drop, and block wire, etc.

**Central office and subscriber station and general equipment.

Operating revenues exceeded 9 billion dollars in 1960, more than an 8 per cent increase from 1959. The BDSA report observed that a factor in the expanded telephone usage and revenues is the increased number of telephone services offered: Secretarial answering, telemetering, Data-phone service, teletype service, leased facilities, "Telpak" services, and "Centrex" service.

The industry's 1961 outlook is bright according to the report.

(Continued on page 60)

Joint Telephone and Power Buried Construction

By RAY BLAIN

Part I

FOR THE PAST several years, there has been an increasing trend toward the use of underground distribution systems, for both telephone and power, in new residential areas. In recognition of this trend and in order to be prepared for things to come, the Illinois Bell Telephone Co. and the Commonwealth Edison Co. of Illinois have for some time now been active in the development and promotion of low-cost buried underground construction. As a result of this pioneering work, these companies are nationally recognized among the leaders in this field.

The earlier installations were made with each utility occupying a separate trench with buried service being provided to approximately 11,000 homes in a joint operating area. The complete cooperation and coordination of efforts of these two companies have contributed in no small degree to the progress that has been made to date in this new concept. The public's interest is always best served when all utilities operate in the least costly manner, consistent with good standards of service.

The telephone and power company managements were of the opinion that *joint* buried underground construction should be considered for possible savings. In October, 1959 a joint committee was established to study the feasibility of this type of construction. In this article, we shall attempt to summarize the activities of this committee and outline some of the joint construction practices that will permit minimum over-all costs.

Both the telephone and power company had standard policies for the installation of buried facilities in new sub-divisions which influence joint construction. These policies are outlined briefly as follows:

[AUTHOR'S NOTE: For further information and data concerning buried telephone facilities in urban areas, the reader is directed to two articles by C. H. Elder, transmission and outside plant engineer, of Illinois Bell Telephone Co., previously published in TELEPHONY: "Underground Distribution Plan in Urban Areas," May 24, 1958 issue, and "Further Considerations of Buried Facilities in Urban Areas," Dec. 6, 1958 issue.]

The Illinois Bell Telephone Company's policy:

New sub-divisions are divided into three different types:

Type 1—Sub-divisions that are laid out and completely built up with houses on every lot under mass production methods by the developer.

Type II—Sub-divisions that are laid out by the developer who may build certain houses on selected lots, or sell lots individually to prospective owners or contractors.

Type III—Sub-divisions that are laid out by the developer and lots sold individually to prospective owners or builders.

The following service options are offered by the telephone company:

(1) No charge where the subdivider or developer agrees to dig and backfill trenches for the distribution cable and all services within the sub-division. This option is applicable only to Type I sub-divisions.

(2) $10 per lot where the subdivider or developer agrees to dig and backfill trenches for distribution cable only. The telephone company to dig and backfill trenches for services. This option is applicable to both Types I and II sub-divisions.

(3) $15 per lot where the telephone company digs and backfills all trenches. This option is applicable to Types I, II and III sub-divisions.

The telephone company reserves the right to refuse buried plant where, in its opinion, costs are prohibitive or it is otherwise impracticable.

The Commonwealth Edison Co.'s policy:

The policy of this company is designed for the mass production builder and sets a minimum of 24 lots for the application of the policy. While the policy has changed, as experience has been gained, the basic effort has been to have the developer dig and backfill all trenches in addition to paying a flat unit charge per residence to cover the excess costs of underground service. The charge does not cover the service connection to the house which is installed, owned and maintained by the developer.

The Joint Committee action:

The Joint Committee's initial action was to consider existing policies and recognize that two basic problems were involved. *First*, joint underground construction in recently developed housing areas, and, *secondly*, replacement of existing joint overhead facilities with underground. Since neither company had much experience on replacement of overhead facilities, and considering that, probably, most immediate benefits would be in new service areas where any development work would be generally applicable, it was decided to concentrate all immediate efforts on new construction.

The preliminary study by the com-

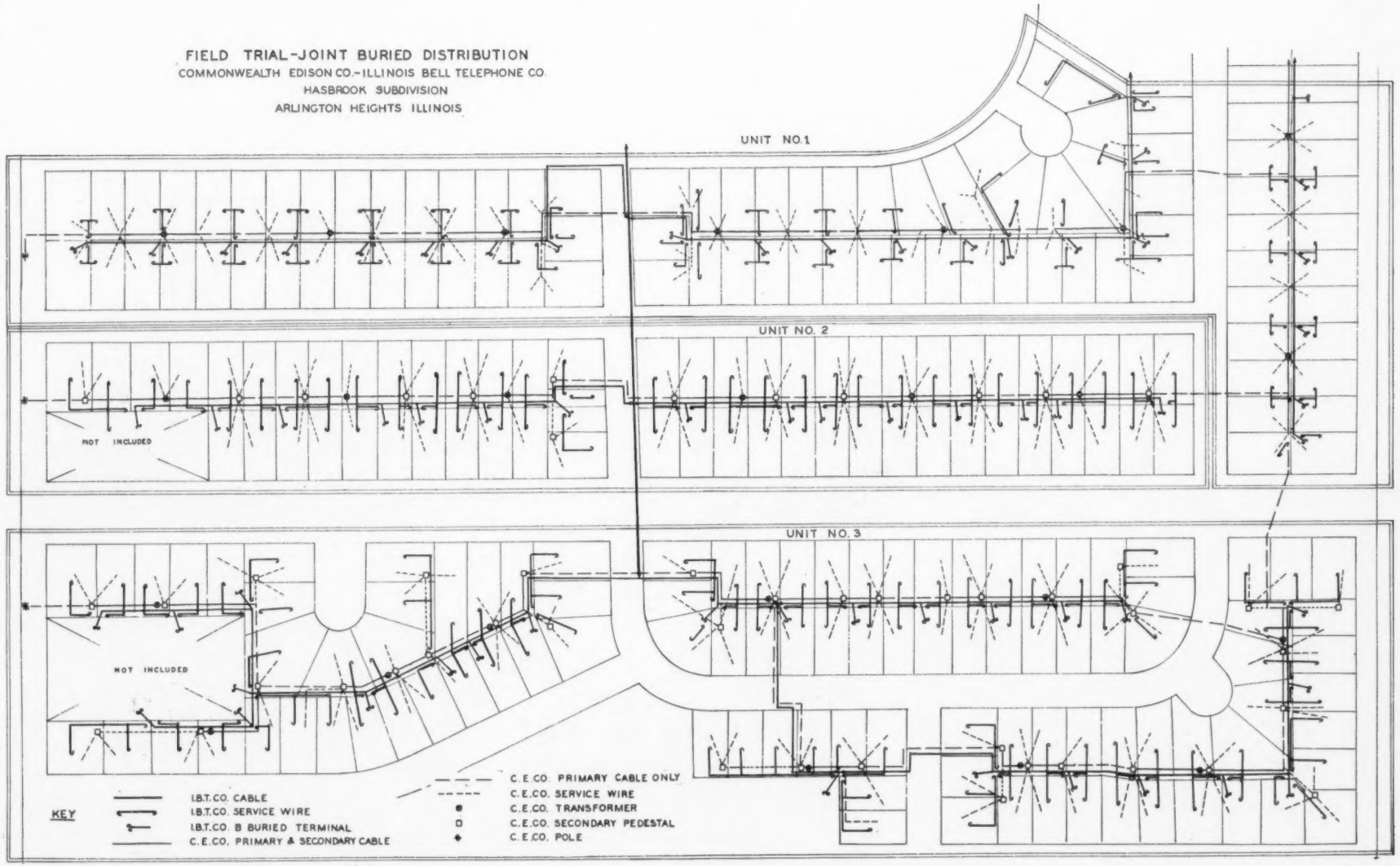


Fig 1. Plat of the system used in three units where service was installed by Illinois Bell Telephone Co. and Commonwealth Edison Co.

mittee resulted in the adoption of the following general policy:

(1) Rear lot line installation would be standard practice.

(2) All cable would be direct burial.

(3) Maximum use would be made of available, minimum-cost components.

(4) A common trench should be used for the cables of both companies with placement to provide twelve-inch separation of power and telephone cables in accordance with the fifth edition of the National Electric Safety Code and General Order No. 160 of the Illinois Commerce Commission.

(5) Trenching and backfilling should be done by the companies' own crews to avoid costly coordination delays when this type of work is handled by outsiders.

(6) Telephone cable sheaths and power neutrals to be adequately bonded.

It was further agreed that primary and secondary power cables should be readily identifiable so that it would be impossible to mistake the power cables for telephone cables, and vice versa. This was considered important, since tests conducted by the Edison Electrical Institute and Bell System Joint Sub-Committee on Buried Distribution Systems in 1959 indicated the feasibility of direct burial of cables with random separation which would eliminate the twelve-inch separation requirement.

Early in 1960, the joint committee

(Continued on page 38)

Fig. 2. Power primary—No. 2 Copper —Butal insulation concentric neutral.

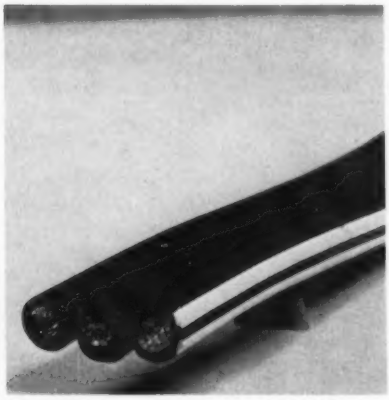


Fig. 3. Power secondary (Ribbon Type). Two conductors 1/0 AWG, 19 strand compact plain copper; one conductor No. 2 AWG, seven strand round plain copper. Laid parallel and insulated as a group, with .130 inch wall of PVC and one outer conductor with longitudinal white stripe for phase identification.

Fig. 4. Power secondary (Triplex type). Two conductor 3/0, 19 strand aluminum insulated with 8/64 inch wall cross linked polyethylene (phase identified by ridges); one conductor 1/0, 19 strand aluminum insulated with 4/64 inch wall yellow PVC; three conductors cabled in Triplex with 36 to 42 inch lay.

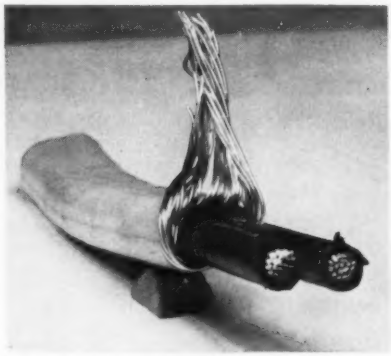


Fig. 5. Power secondary (Unit type). Two conductors 1/0, 19 strand tinned copper with 5/64 inch wall RHW moisture and heat resistant rubber insulation, color coded with compound filled tape. Insulated conductors laid flat and assembled with concentrically applied No. 2 copper conductor. Assembled conductors sheathed in 4/64 inch yellow PVC jacket.

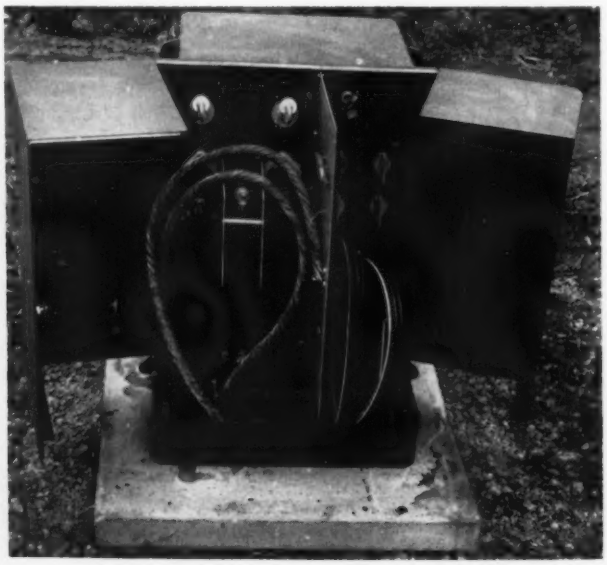


Fig. 6. (Left). Transformer in place. Fig. 7 (right). Transformer with cables ready for termination.

Taking the PBX Peg Count

By GILBERT R. BRACKETT

I SUPPOSE every Service Adviser has at one time or another been plagued with this question from her PBX constituents . . . "We had 1826 calls on such and such a day this month. Doesn't that mean something? Isn't our switchboard carrying an awfully heavy load? Shouldn't we have more positions of switchboard and more operators?"

Unfortunately, there is no direct answer to such a query. To determine the call carrying capacity of any PBX is an involved problem. Did the question have to do with incoming to extension calls, toll calls, or did it allude to a combination of all classes of calls?

Determines Facilities

While it is true that the basic measure of our business is the number of calls handled, the underlying factor which governs the calls, as they originate from a group of telephones, is actually what determines the facilities which will be required to produce the grade of service that meets with approved standards and the user's satisfaction. These factors are:

(1) The elapsed time the operator will use to advance each call to completion.
(2) The number of operators that are available in one group to handle all the calls offered them.
(3) The efficiency of the attendants that handle the calls.

In the first place, we are not particularly interested in the total switchboard load for the day. Our interest is in the busy hour. It is this period which controls the amount of equipment and the number of operators needed. If enough switchboard positions and operators are furnished to cover them during the busy-hour period, there will be no difficulty handling the traffic during the more quiet hours of the day.

If previous peg counts have been taken at a PBX installation, and the busy hour weighted coefficient has been established, a close answer can be given to the above question. The average PBX busy hour is about 11 per cent of the total day's calls.

Example Cited

Let us assume the switchboard in question is a two-position installation and the same number of calls are handled during the working day, 1826; therefore, .11 x 1826 = 201 calls for the busy hour. Now we shall further assume the weighted busy-hour coefficient, as shown by previous counts, is 2.71. Therefore, 201 calls x 2.71 = 545 units, the number handled by the two operators during the busy-hour period. According to approved standards, two operators are capable of giving good service while carrying 200 units each during the busy hour. So we divide the 545 units by 200, the load an operator can carry on a two-position PBX, and we find that the load calls for 2.72, or three positions of switchboard and the same number of operators.

Traffic peg count records provide data concerning traffic volume, loads and costs that are necessary for engineering and administrative purposes. As we said before, the basic measure of telephone traffic is the number of calls that pass through the equipment or originate or terminate at a switchboard. Traffic peg counting is the process of pegging or counting calls of different classes at intervals frequent enough to establish a reliable picture of the hourly variations as well as seasonal changes and growth.

Based on Probability

The traffic unit, or coefficient, is the amount of operating work-time that can be repeated 230 times an hour by a fully experienced operator of average ability. This unit, or coefficient, is based on theory of probability, modified to take into account that the work is performed by people and not by machines.

A coefficient is determined by work-time per call, operator team size and per cent occupied time that will bring about the approved speed of answer to signals. The work time is governed by the class or type of call, the operating method and type of equipment in use.

The per cent occupied time depends upon the number of operators in a team, the desired speed of answer to signals, and the length of operator work time. The equipment is designed so calls may be handled with a minimum of operating labor. Operations are set up on the basis that they must give satisfaction to the caller and involve no unnecessary labor for the operator. The experience and ability of the operator can also affect the work time. An operator is said to be fully experienced and capable of carrying her share of the load when she has done work of a particular kind long enough to know, without hesitation, what to do and how and when to do it.

Accuracy Important

All peg counts should be taken under the direction of personnel trained for such work. All those engaged in taking traffic counts should be thoroughly instructed in the details and methods and impressed with the importance of accuracy. The person making the study should fully understand that a traffic count, which is not wholly accurate in timing and pegging, is worthless as a source of technical information.

A traffic study should be taken on all cord-type PBX switchboards during the customer's first busy season following the installation of the equipment. Also, detail counts should be made at a PBX when requested by a customer, the traffic engineer, the traffic superintendent, the commercial department, or as dictated by routines written expressly for the telephone company involved.

Usually, all traffic counts should be referred to the traffic engineer for suggestions on the manner in which the

count should be made and the details of the items to be covered by the survey.

Traffic Record Needed

A traffic record should be available, disclosing the busy season traffic, the number of attendants at the board during the busy hour, and the number of switchboard positions installed. A record made two to three years previous is satisfactory if the number of trunks and extensions haven't changed materially. A close watch of all PBX traffic records on file should be maintained. A new study is in order if any one of the records does not seem to represent the present day's traffic.

The PBX Service Adviser should at all times be cognizant of the amount of equipment available for assignment to the PBX customers under her supervision. If, at any time, it appears that additional equipment may be required in a few months, a memo outlining the Service Adviser's recommendations should be forwarded along the proper channels to the parties most interested.

Ordinarily, a two-day peg count, taken in a normally busy week, should be sufficient. However, the number of days the count should cover may be determined by the needs of the study. It should cover as long a period as is necessary to ascertain the constancy of the load and to obtain a representative picture of the traffic. When there has been no previous study made at a PBX, a three-day, or even a five-day, survey would give a fair sampling of the traffic passing through the equipment and switchboard. When the busy hour has been firmly fixed at a PBX by previous studies, surveys of the busy hour

(Continued on page 28)

BASE COEFFICIENTS
PRIVATE BRANCH EXCHANGE SWITCHBOARDS

	HOTELS		OTHER THAN HOTELS	
	Refer Also To	Coef.	Refer Also To	Coef.
1. Extension to Extension—Ext. or Tie Line to Manual Tie Line	17, 19 to 27, 29, 30	1.00	19 to 26, 27, 29, 30	.90
2. Incoming to Extension—Other than Department Store	17, 20 to 26, 27	1.40	16, 20 to 27	1.15
3. Incoming to Extension—Department Store		—	16, 20 to 27	1.65
4. Order by Telautograph	29, 30	4.00		—
5. Morning Calls		1.40		—
OUTGOING TO MANUAL CENTRAL OFFICES				
6. Local—Passed by Attendant	15 to 20, 28, 29, 30	1.60	16, 18 to 20, 28, 29, 30	1.60
7. Calls Passed by Ext.—(Attendant Connects Trunk)	28, 29, 30	.90	28, 29, 30	.90
OUTGOING TO DIAL CENTRAL OFFICE				
8. Local—Dialed by attendant (4 Pulls)	15 to 20, 22, 28 to 30	1.50	16, 18 to 20, 22, 28 to 30	1.50
9. Calls Dialed by Ext.—(Attendant Connects Trunk)	28, 29, 30	.90	28, 29, 30	
TOLL				
10. Toll Operator Calls and Announces Time and Charges	15-17	5.00		—
11. Attendant Records and Passes		—	13, 18, 25	10.00
12. Attendant Records and Passes—Including receiving time and charges	15-17	15.00		—
ALLOWANCES FOR OPERATING METHODS				
	To Be Added To	ALLOWANCE	To Be Added To	ALLOWANCE
13. Receiving Time and Charges—Toll calls		—	15	3.00
14. Passing Room Number to Toll Operator	Obsolete			
15. Quoting Charges	6, 8, 14, 16	1.60		—
16. Announcing Calling Party to Called Station	6, 8	2.50	2, 3, 6, 8	2.50
17. Verifying Calling or Called Station	1, 2, 6, 8, 14, 16	1.40		—
18. Reference to Exchange Directory	6, 8, 25	4.00	6, 8, 15, 25	4.00
19. Extension Hang Up	1, 6, 8	3.70	1, 6, 8	3.70
20. Taking Message	1, 2, 6, 8	2.00	1, 2, 3, 6, 8	2.00
21. Delivering Message	1, 2, 6, 8	4.50	1, 2, 3, 6, 8	4.50
22. Each Additional Pull on Dialed Calls	1, 2, 8	.08	1, 2, 3, 8	.08
23. Conference Calls	1, 2, 6, 8	—	1, 2, 3, 6, 8	—
24. Reference to P.B.X. Directory	1, 2	1.30	1 to 3	1.30
25. Reference to Long Distance Directory	6, 8, 11	1.30	6, 8, 11	1.30
26. Paging	1, 2	5.50	1 to 3	5.50
	To Be Deducted From		To Be Deducted From	
27. Machine Ringing	1-2	.07		.07
28. Individual Busy Signal and Idle Trunk Indicating	6 to 9	.05		.05

MODIFICATION FOR MULTIPLE EXTENSION LINE LAMPS

	To Be Applied To	Coefficient To Be Multiplied By
29.	1, 4, 6 to 9	.94
30.	1, 4, 6 to 9	.90

FIG. 1

NEW

BY UNITED STATES MOTORS CORPORATION

100 KW DIESEL "MICRO POWER"

A COMPLETELY NEW DIMENSION IN NO-BREAK UN-INTERRUPTED ELECTRIC POWER SUPPLY

United States Motors Corporation is keeping pace with the industry — growing daily. In days past, our Micro Power units ranged in size from 1½ KW to 20 KW capacity. Today, we are building Micro Power units in capacities up to the NEW 100 KW UNIT pictured above. Tomorrow — we will build them even larger to satisfy the increasing capacity requirements for dependable no-droop, no-drop standby power. Every Micro Power built today reflects more than 10 years of laboratory and field research-testing. What's more — several thousand operating units attest to its demand for a wide variety of applications.

SPECIALIZED SALES AND SERVICE CENTERS LOCATED THROUGHOUT THE UNITED STATES & FOREIGN COUNTRIES

For complete information — call or write

SPECIAL FEATURES

- ★ off the line initial start-up with automatic engine control.
- ★ load isolation from incoming supply at all times.
- ★ incoming 50 cycle frequency automatically converted to 60 cycle output frequency when desired.
- ★ ultimate for stabilizing incoming variations of voltage and frequency.

MICRO US POWER

UNITED STATES MOTORS CORPORATION 102 West Fifth Avenue • Oshkosh • Wisconsin

only of a particular facility at a PBX should take care of normal conditions.

A full day's study on all facilities should be made on large PBX's at least once each year or even more often if seasonal traffic surges are to be discovered. Such counts are necessary to determine whether or not the traffic flow has changed and if the established busy hour is holding constant.

Should a traffic study be started and an unforseen incident affect the volume of the traffic at the PBX to a marked degree, the count should be called off.

(Continued on page 47)

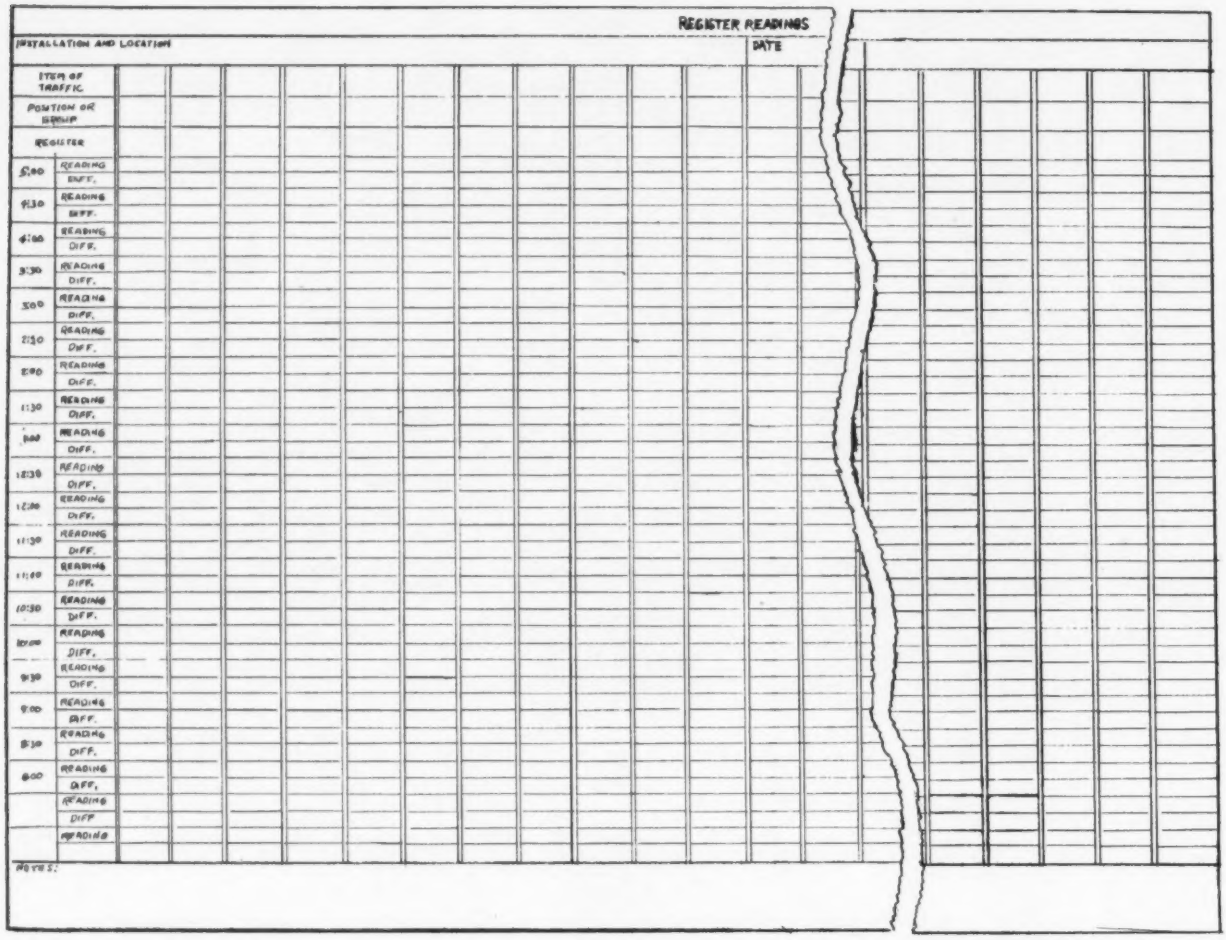


FIG. 2

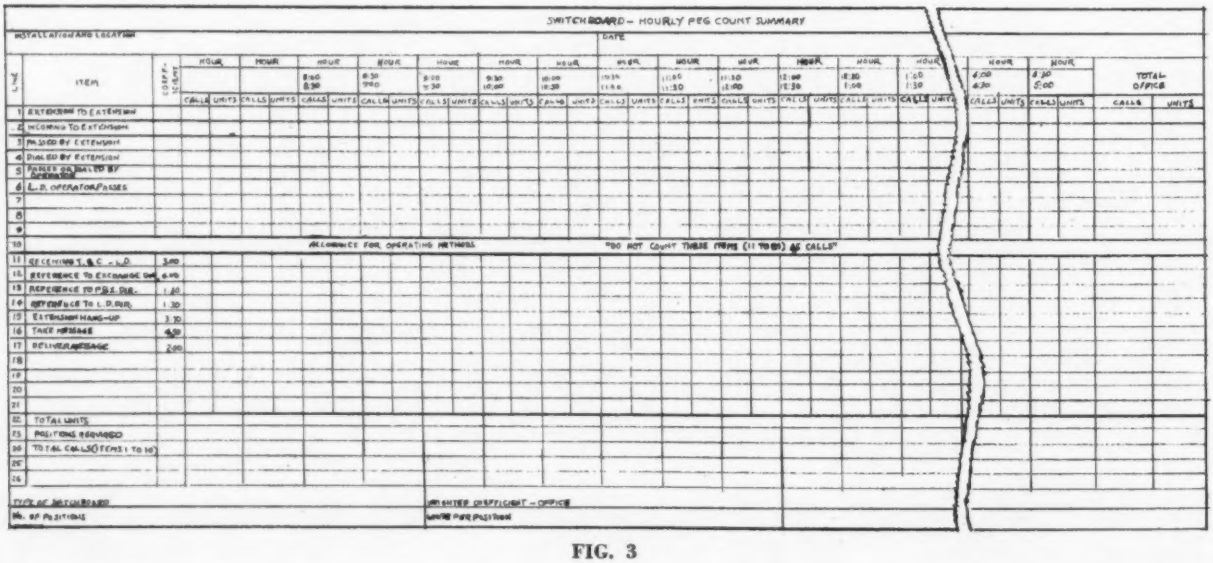


FIG. 3

LOW-COST, LONG-LIFE PROTECTION

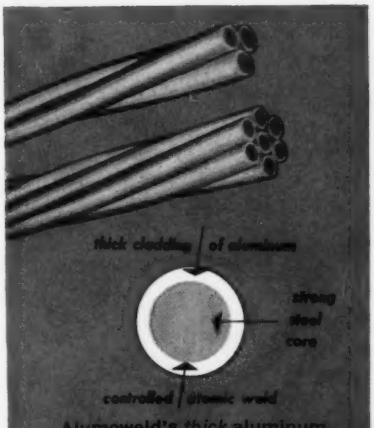
for your overhead lines

Alumoweld Guy and Messenger Strand is designed to last as long as the pole it guys or the cable it supports. Each wire of this low-cost strand has a *thick* aluminum covering applied to the strong steel core by the controlled atomic-welding process. This unique method of manufacture gives Alumoweld the same permanent protection against corrosion as solid aluminum wire.

The rugged strength of Alumoweld is the same as steel, yet Alumoweld weighs 18% less and lasts far longer. It's easy to handle, easy to install.

Supplies of Alumoweld Strand are available for prompt shipment from our warehouses in New York, Chicago, Pittsburgh and Memphis.

For the complete story on Alumoweld, write for Engineering Bulletin E.D. 3000.



Alumoweld's *thick* aluminum covering—25% by area—will not crack, flake or peel. It is inseparably interlocked with the high-strength steel core by a ductile weld that remains permanent under all operating conditions.

COPPERWELD STEEL COMPANY

WIRE AND CABLE DIVISION Glassport, Pa.

For Export: COPPERWELD STEEL INTERNATIONAL COMPANY, New York

Canadian Distributor: NORTHERN ELECTRIC COMPANY LIMITED

MIND YOUR OWN BUSINESS

A personal file of stimulating ideas; little known facts and daily problem solvers

By Ted Pollock

HOW TO LEARN. By common consent, ours is an age of specialization. No matter how you earn your living, in order to grow, succeed and advance you must keep up with the new discoveries, ideas and techniques in your field. In short, a good deal of your time and energy must be devoted to the study of the printed word. As in every other activity, there is a *best* way to master printed material. Psychologists and educators generally agree that the following steps represent the shortest distance between the desire for, and the accumulation of, knowledge.

Concentrate on accuracy. Because learning something incorrectly, *un*learning it, then learning it correctly is obviously triple work, you can reduce your learning work-load by two-thirds by getting things right the first time. Take your time—trying to assimilate information quickly more often defeats than serves its purpose. Slower, more accurate learning is actually faster in the long-run.

Study only when you are in "condition." There is a Law of Diminishing Returns in learning. If boredom or fatigue set in, attention—hence, learning—nose-dives.

Seek to understand. Learning a thing *means* understanding it. You cannot absorb and remember what you never knew in the first place. So if you are not able to follow a thought, go back to where you lost the trail and tackle it again. Suggestion: a sure-fire method of compelling yourself to concentrate on the *meaning* of what you are reading is to paraphrase it on paper. To acquire skill here, make up your mind to "translate" the original into your own words. Thus you will penetrate to realities, for you never really grasp what somebody else means until you have cast his thoughts into words that mean something to you.

Look for general principles. You could easily multiply 694357 x 143275—not because you ever did it before—but because you've learned the *principle* of multiplication. Mastery of a general principle places less of a burden on your memory than would all the specific information that comprises it. It prepares you for understanding future information based on it. Most importantly, it helps you *organize* future facts and ideas by providing large "mental compartments" for them. Whenever possible, therefore, try to spot basic principles in what you are reading. They are far more important than the specific examples used to illustrate them.

Overlearn. You've never forgotten your own name, have you? If you analyzed the reason, you would find that because you had pronounced, signed and responded to it so often, it had become indelibly engraved on your mind. You have "overlearned" it. *Everything* you can recall without effort has been overlearned through frequent use. In the language of psychology, "overlearning" means "reviewing something that has already been learned sufficiently for one perfect recitation." Experiments have consistently proved that there is a precise and favorable correlation between the amount of "overlearning" and the ability to remember material for a long period of time.

The rule, therefore, is straightforward and inflexible: *After you have learned any given material up to the point of being able to repeat it smoothly, continue to drill yourself in it just as if you had not yet learned it.*

DONT'S FOR ANGRY PEOPLE. The biggest deal of your life falls through . . . somebody in your office inadvertently throws away an important letter . . . you're tied up in traffic on the way to a crucial appointment. For one good reason or another, *you're mad!* Because anger fogs perspective and dulls judgment, certain activities should be shunned while a temper runs its course. If you're angry—real, deep-down angry—*don't:*

- Make important decisions.
- Write letters.
- Criticize others.
- Get into arguments.
- Entertain.
- Drive.
- Drink.
- Handle knives, guns, fire.

ART OF MAKING "LUCKY" GUESSES. Not all problems can be "solved" by logic alone. Frequently, certain vital information is unavailable at decision-making time. Sometimes, only future facts or events can prove the wisdom or folly of a specific course of action. For one reason or another, you have to gamble.

But there are ways to stack the odds in your favor. Here is a six-step gen-

(Continued on page 34)

Good News For Record Buffs

Favorite record warped? Don't discard that treasured collector's item. Place record between two sheets of glass and allow to set in the sun. Heat will soften disk and weight of glass will flatten it back into shape.

Where you'll get the word

1961 CONVENTION USITA

OCTOBER 9-10-11
CONRAD HILTON HOTEL
CHICAGO, ILLINOIS

Outstanding speakers, significant conferences, food, fun, and fellowship! Also, two general sessions, the annual banquet, manufacturers' exhibits, answers to your questions. Let's go!

U. S. INDEPENDENT TELEPHONE ASSOCIATION, 438 PENNSYLVANIA BLDG., WASHINGTON 4, D. C.

AE *provides business communications for large or small subscribers!*

Let's consider two completely different commercial customers in your area. The taxi stand needs a strong, weather-proof telephone. The phone must be accessible only to the cab drivers. You can offer this customer our rugged Outdoor Phone...

Your local golf club, on the other hand, needs a complete communications system to handle incoming, outgoing and internal traffic. For this customer, our 10-A1 Key System is ideal.

For details on our complete line of business phones, PABX and PBX boards and key systems, see your AE representative. He can also furnish you with valuable sales aids to help you promote business communications equipment. To contact him, write Automatic Electric Sales Corporation, Northlake, Illinois.

AUTOMATIC ELECTRIC

Subsidiary of

GENERAL TELEPHONE & ELECTRONICS

GENERAL SYSTEM

CALL COMMANDER* PHONE

For use with the 10-A1 Key System. Provides service for up to 17 outside, PBX or private lines. Pushbuttons light to serve as line signals. Intercom and conference features, too!

*CALL COMMANDER is a registered trademark of Automatic Electric Company.

OUTDOOR PHONE

A must for loading docks, cab stands, lumber yards, etc. Regardless of the weather, this phone performs with indoor dependability. Locking door limits use, prevents abuse.

eral formula that fits any case in which no clear-cut right or wrong exists:

(1) Forget hunches and prejudices.

(2) Carefully study the available facts.

(3) Determine what might be the best result and the worst result from each possible choice.

(4) Decide whether you could bear the *worst* possible result in each instance without disastrous effects.

(5) If so, consider whether the *best* possible result is likely enough and inviting enough to warrant risking the consequences of failure.

(6) Select the course that offers the brightest prospect *in proportion to its risk.*

FOR GREATER EFFICIENCY—ELIMINATE THE UNNECESSARY. Among the arch time-killers in everybody's life are the many unnecessary steps taken in doing things. The answer? *Simplify!*

Don't know where to begin? Try answering the following questions about the way you now do any job:

What are the separate steps I take in doing it? Actually write them down where you can study them.

Can any of those steps be skipped without spoiling the result? Frequently, we become habit-bound and continue to do things simply because we have always done them. For example, before you drive to work, do you always sit in your car for a minute or two and warm up the engine? Except for the coldest days, you could probably just hop in and drive off in 30 seconds. Look over your steps to see if any can be eliminated.

Can the order of the steps be changed? Just because you've always done ABCD doesn't mean that ACBD might not be a more efficient approach. Check your steps with this in mind.

Are there any tasks that can or ought to be done by someone else? One of the biggest stumbling blocks in the way of efficiency is the inability to delegate. Few have mastered the knack of separating the things that only *they* can do from the things that *others* can. If, for instance, you now spend time in looking up information, why not let someone else (if you *have* someone else working for you) do it? Look over the steps once more to see if you can delegate any of them.

HOW TO START YOUR DAY OFF RIGHT. *How* you start your day often determines how much you will accomplish, how well you will get along with others, how you will feel by 5 p. m. Here are four specific things you can do to guarantee getting off to a good start.

- *Make yourself want to get up.* Instead of dwelling on the discouraging things you have to face, concentrate on the pleasantest, most enjoyable thing you have to do that day. You'll find it a lot easier to get out of bed.
- *Anticipate minor decisions.* "What should I wear?" "Where's my brief case?" "What goes with a gray suit?" Petty decisions and minor frustrations can ruin a morning, keep you angry for hours afterwards. Solution: decide the night before what you will wear, what you need take to the office or your place of business, lay everything out before going to bed. In the morning—no problems!
- *Have a good breakfast.* Contrary to popular opinion, the cigarette-and-black-coffee routine is *not* a time-saver in the long-run. It only postpones hunger, increases irritability.
- *Get an early start.* More and more executives are learning the virtues of arriving at their offices 15 or 30 minutes early. Without the interruptions and distractions of others around them, they get their thinking done in half the time it would ordinarily take, plan their day's activities, get a jump on the day's chores.

When Your Money Burns, Tears Or Wears Out

What if bills have been scorched or partly burned? The Treasury will still redeem them at full value if its experts conclude that real money has been destroyed. No matter what fragments are left, don't despair until you have sent the actual fragments to the Treasury for analysis. Sometimes new money is given for what may seem to be slight evidence, because the Treasury's facilities for scientific analysis are, often, unbelievably ingenious.

As for mutilated bills: If you have three-fifths or more of a mutilated genuine bill, you may redeem it for its full value through the Treasurer of the United States. If you have less than three-fifths, but clearly more than two-fifths, you can exchange it for one-half its face value. To redeem fragments not more than two-fifths of the original bill, you must send them with *satisfactory proof* that the missing portions have been totally destroyed.

Take mutilated bills to your bank, or send by registered mail, accompanied by the proper affidavits, to the Currency Redemption Division, Treasury Department, Washington 25, D. C.

WORDS THAT CAN MAKE—OR BREAK—YOU. Whether you're trying to close a sale, win an argument, or just be personable on paper, the words you use can help—or hinder—your cause. Recent research has uncovered the words to which most people react favorably—and unfavorably. Here they are:

Most People Like These Words

advantage	integrity
appreciate	justice
benefit	kind
capable	loyalty
confidence	please
conscientious	popularity
cooperation	practical
courtesy	prestige
dependable	progress
desirable	reliable
ease	responsible
economy	satisfactory
effective	service
efficient	success
energy	superior
enthusiasm	useful
genuine	valuable
helpful	vigor
honesty	you
honor	yours

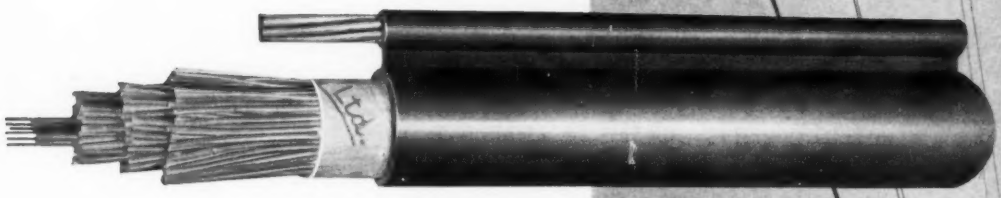
Most People Dislike These Words

abuse	ignorant
alibi	imitation
allege	implicate
apology	impossible
beware	misfortune
blame	negligent
cheap	opinionated
commonplace	prejudiced
complaint	retrench
crisis	rude
decline	squander
discredit	superficial
dispute	tardy
exaggerate	timid
extravagant	unfair
failure	unfortunate
fault	unsuccessful
fear	waste
fraud	worry
hardship	wrong

EASY WAY TO REDUCE YOUR ELECTRIC BILL. Cut down on light bulbs by using one high-wattage one instead of several smaller bulbs. A 100-watt bulb gives 50 per cent more light than four 25-watt ones, yet costs only a few pennies more per bulb than the small size.

HITACHI

This is the Gourd-type cable — a new shape that contains a suspension strand, a communication line, and the answer to several problems!



This unique local or exchange area cable developed by Hitachi derives its distinctive "gourd shape" from the polyvinyl chloride sheathing that totally encloses the polyethylene-insulated communication line as well as its parallel suspension strand. It can be used in all the applications of conventional PE-insulated PVC sheathed cable and, in addition, is suitable for installation on steep grades where paper-insulated lead sheathed cable could not be used.

Another notable feature of the gourd-shaped cable is that it dispenses with the need for hangers, making installation easier, cheaper and faster. It can be installed close to buildings and power lines with complete safety (the suspension strand can be grounded to reduce electrostatic induction in the latter instance), retains high transmission qualities under the most trying weather conditions, and successfully withstands attack by salt or airborne chemicals.

Communication Equipments

Hitachi, Ltd.
Tokyo Japan

Cable Address: "HITACHY" TOKYO

The Plant Man's NOTEBOOK

By RAY BLAIN, Technical Editorial Director

SOUTHERN California has been selected as one of four areas in the Bell System to test a new connector method of cable conductor joining developed by Bell Telephone Laboratories.

This new "B" Connector, slightly longer but somewhat thinner than an ordinary cigarette filter, is used to join pulp-insulated cable conductors. The connector consists of an outer shell of soft brass, having an external insulating covering, with a liner of tin-plated spring phosphor bronze. The inner surface of the liner has sharp tangs formed by a piercing operation.

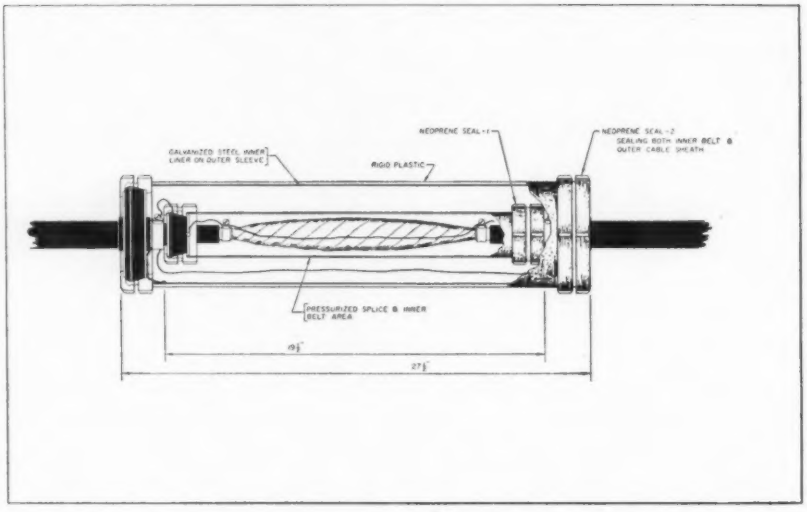
The joint is made by placing the ends of the conductors in the connector without removing the insulation and then squeezing the connector in a pneumatic presser. The tangs of the insert are pushed through the insulation and make contact with the conductors. They remain held there by the soft outer shell.

If the field trials prove successful, the new splicing technique will replace the old Western Union "Pig-tail twist" method. Nearly a half million splices will be made during the southern California trial. Similar amounts will be undertaken in the other three test areas.

•

We have a letter from Gene G. Armiger, project engineer for Advanced Communications Engineering, a division of Cook Electric Co. Recently, this company was awarded a contract to engineer, furnish and install a hardened wire telephone system for three intercontinental ballistic missile sites. Because of the terminology "hardened wire," which is uncommon to the telephone industry, the task of meeting this criterion presented a challenge. The term "hardened wire" means a wire plant that will provide uninterrupted service under most severe conditions.

Advanced Communications Engineering, in conjunction with Channel Splicing Machine Co., and Superior Cable Corp., has developed a new technique for sealing splices in direct buried telephone cable that will probably rate considerable acceptance in buried plant construction.


GALVANIZED STEEL INNER LINER ON OUTER SLEEVE
RIGID PLASTIC
NEOPRENE SEAL-1
NEOPRENE SEAL-2 SEALING BOTH INNER BELT & OUTER CABLE SHEATH
PRESSURIZED SPLICE & INNER BELT AREA

Cutaway view of new splice-sealing technique for direct buried cable.

This new technique makes use of two plastic cylindrical sleeves (see cut) as opposed to the galvanized cast iron splice case method. The development and application of this method was pioneered by the aforementioned companies with considerable time devoted to details of methods, techniques, and the best materials known to the industry.

The closing of splices in these ICBM cable systems with double plastic sleeves is designed to provide maximum protection for the splice against any type of rodent or insect attack. The splice actually has a physical protection greater than that of the cable. The sleeve provides a positive seal for pressurization, eliminating the chance of air seeping from the inner pressurized belt to the outer layers. The end seals on the sleeves have a positive locking and sealing action, and the sealing grommets provide maximum protection from cold flow.

This plastic sleeve is designed to seal double-sheath-armored cable, Superior Cable Corp.'s Type PAP-LD-CS and Anaconda Wire & Cable Co.'s Type PBP-LO. The double plastic is available in two sizes: Type I and Type II. The Type I sleeve has a capacity on the inner sleeve diameter of a maximum of 1.375 inches and Type II with a maximum of 2.250 inches. The outer sleeve is designed to receive both types of inner sleeves and can be fitted to cables with an outside diameter of .925 inch through 2.250 inches.

•

It has come to our attention that several operating telephone companies are mailing stickers to their customers to place on the dial number plate to indicate the area code.

There are over 100 such code numbers assigned to different parts of the country at the present time.

Subscribers should be instructed to give their area code to all out-of-town callers. The area code is now actually a part of your personal telephone number.

Instructions must be made clear, however, that the area code is not to be used to call numbers in the same telephone code area.

USITA Picks Independent Exchanges for Toll Study

Independent telephone companies whose exchanges have been selected to participate in the United States Independent Telephone Association's nationwide study to test the adequacy of toll settlements between Independents and Bell System companies, and to provide data as a basis for future revisions of average nationwide cents-per-message schedules, were notified of their selection recently by USITA Settlements Coordinator Mervin H. Alexander.

The Independent exchanges to be studied were selected on a random sampling basis by statisticians retained by USITA working jointly with Bell System statisticians.

Mr. Alexander urged the importance of having all selected Independent exchanges participate in the study of the A and B schedules in order to minimize the sampling error.

In urging the Independent companies to take part in the USITA study, Mr. Alexander said:

"You will recall that studies conducted in 1955 added 11 million dollars to settlements for Bell-Independent (B-I) toll business based on the volume of messages at that time. Since then, two additional increases have been negotiated by the USITA Settlements Committee, the latest in the current year 1961. In the negotiations that led to the 1961 upward revision in the A schedules, it was agreed by the Settlements Committee that there is an urgent need for a nationwide study to provide current data upon which to base future revisions of average settlement schedules. It was also agreed that the study would be conducted by the USITA jointly with the Bell System during the year 1961. The present interim schedules are effective until Apr. 1, 1962, and assume that the studies and negotiations required to provide new schedules would be completed well in advance of that time.

"Study procedures for this nationwide study have been completed and in August were sent to companies that participate in the study. Assistance, if required, will be provided to the Independent companies to the extent feasible for completion of these studies."

Dr. F. B. Llewellyn Retires From Bell Laboratories

Frederick B. Llewellyn retired as assistant to the president of Bell Telephone Laboratories as of Sept. 1.

Dr. Llewellyn, who had a 38-year career in the Bell System, accepted an appointment as research physicist at the Institute of Science and Technology of the University of Michigan. He will assume responsibilities in connection with the planning and administration of the research program beginning in the fall 1961 term.

QUALITY WORK
FAST WORK
DEPENDS ON
GOOD TOOLS

In pliers the best is
KLEIN

201-NE
Side cutting plier

213-9NE
High leverage plier

202-5
Oblique cutting plier

203-5
Long nose cutting plier

Since the first communication lines were strung a century ago, Klein Pliers have been the standard tool in the hands of linemen and electricians.

As techniques in the electrical field advanced Klein has kept pace designing special pliers to meet every need. Today Klein offers over 150 different styles and types of Klein Pliers for any phase of electrical or electronic wiring.

Write today for a Klein catalog listing over 150 different Klein Pliers.

See your Distributor

Foreign Distributor: International Standard Electric Corp., New York

Mathias KLEIN & Sons
Established 1857 — Chicago, Ill., U.S.A.
INCORPORATED
7200 McCORMICK ROAD, CHICAGO 45, ILL.

Mathias Klein & Sons, Inc., 7200 McCormick Road, Chicago 45, Ill.
Please send me a copy of the Klein Plier Catalog.

Name_____ Title_____

Company_____

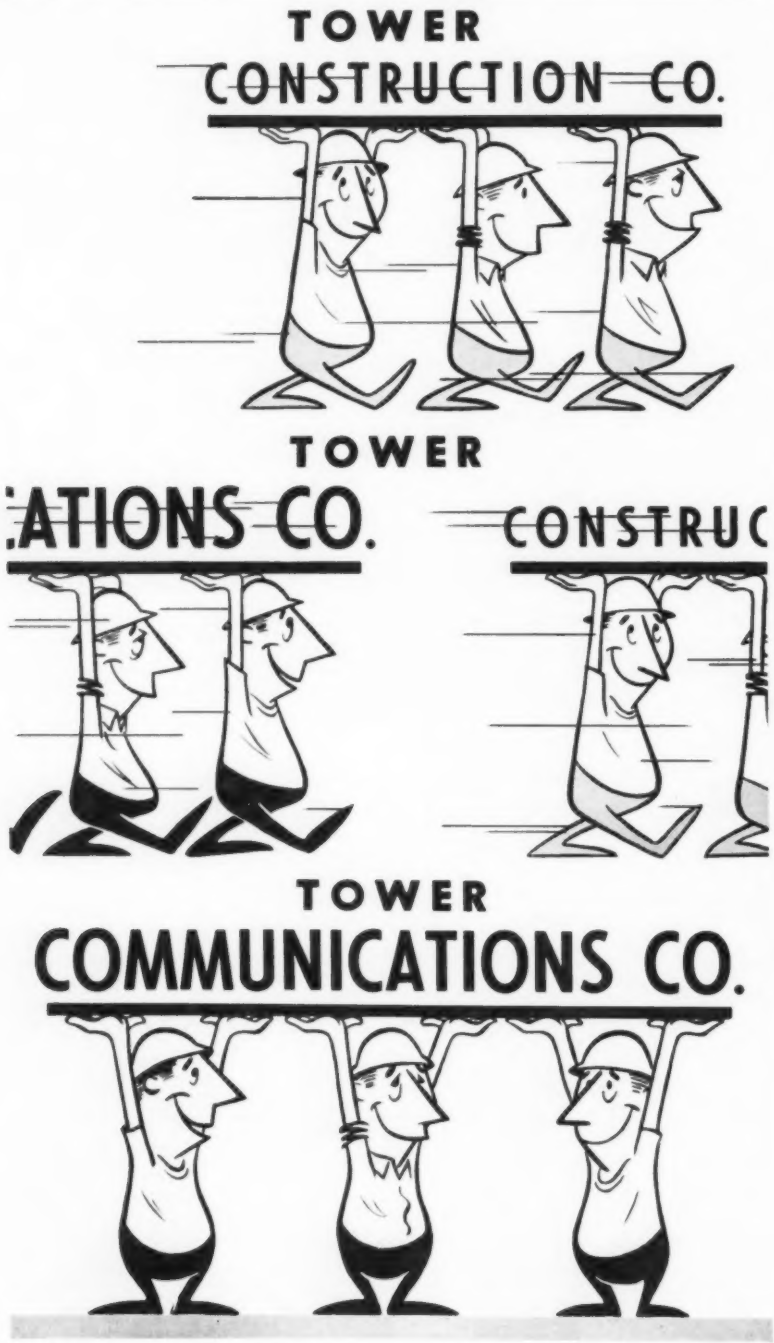
Address_____

City_____ Zone_____ State_____

ONLY THE NAME HAS CHANGED

The Tower Construction Co. has changed its name. The new name is TOWER COMMUNICATIONS CO. That's the only change that's been made. Everything else . . . management, employees, the modern production facilities, are still the same.

TOWER
COMMUNICATIONS CO.
2700 HAWKEYE DR. SIOUX CITY, IOWA



BURIED CONSTRUCTION

Continued from page 24

of Commonwealth Edison and Illinois Bell received high level endorsement from executives of both companies to conduct field trials in new sub-divisions, with the cables of both companies placed in a common trench in accordance with the general approach recommended by the committee.

The 1960 Trial Installation

The first location selected for the trial installation was the Hasbrook Sub-division in Arlington Heights, northwest of Chicago. The trial job was divided into two separate units. The first consisted of two blocks and a total of 59 homes were installed in July, 1960. The second involved over three blocks, and 99 homes were installed in September, 1960. The plat of the system used in these two units and an adjacent unit of 83 homes, where service was installed in separate trenches for telephone and power, is indicated in *Fig. 1.* This drawing refers to the 83 lot separate trench area as Unit No. 1, and the 59 and 99 lot common trench sections as Units 2 and 3, respectively. This designation will be used in future reference throughout this article.

Fig. 8. Power company secondary pedestal.

Arrangements were made with the subdivider to service the two trial units within the standard policies of the two companies. Under this arrangement, the telephone company collected Option 3 for the Type I subdivision and the power company collected for trenching costs, in addition to providing the standard contribution. In both units of this first trial, installations of service cables to the houses were made in separate trenches because of the variation

in ownership established by the standard policies.

The type of materials used.

The basic materials used by the power company consisted of a concentric primary cable, shown in *Fig. 2*, and three new types of ribbon secondary cable, shown in *Figs. 3, 4* and *5*. The pad-mounted transformers are shown in *Figs. 6* and *7*. The pedestal service connection terminal is shown in *Fig. 8*.

Fig. 9. Illinois Bell Telephone Co. B buried cable terminal (service pedestal).

The ribbon type secondary cable proved to be the most acceptable of three types of secondaries developed for the power company to meet the identification requirements of common trench type construction. This type cable has been standardized with aluminum conductors for future use, rather than copper conductors that were used on the trial installation. These secondary cables were the only variation from previously used components which, together with the concentric or lead-covered primary cable, insured positive identification of all cables in any future digging operations.

The telephone company used its standard cable with a core of polyethylene-insulated conductors wrapped in an aluminum shield and jacketed with a polyethylene sheath. The above ground splice closures, and the B-type buried wire cable terminal are shown in *Fig. 9*. These items, and the type B service wire, were all previously used and proved standard components.

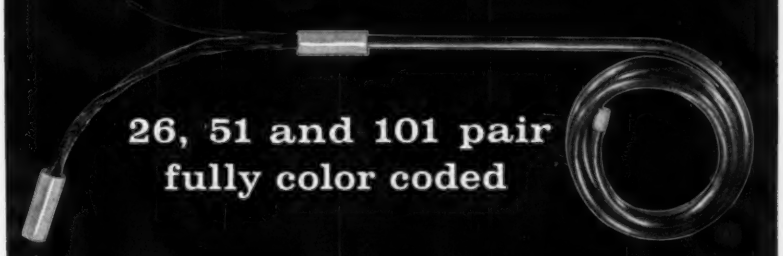
(To be continued)

Turn Chance to Profit

"Chance happens to all, but to turn chance to account is the gift of few."—BULWER-LYTTON.

MD

CABLE STUBS



26, 51 and 101 pair
fully color coded

The MD Cable Stub is a section of lead sheathed, polyvinyl chloride insulated 24 AWG cable with a pressure plug (gas dam), factory installed at the end of the sheath. Each stub is factory tested to insure that it is gas tight before shipment.

FOUR PRIMARY USES OF THE MD CABLE STUB

1. Permits the use of Ready Access type terminals on paper and pulp insulated cables.
2. Simplifies splicing of paper and pulp insulated cable to plastic insulated conductor (PIC) cable.
3. Makes possible the use of Ready Access type loading on paper and pulp insulated cable.
4. Makes "tipping out" of paper insulated cable easier.

Reliable

A Symbol of Integrity Since 1909

Installation Specification No. 109 describes installation procedures for MD Cable Stubs. *Send for yours today.*

ELECTRIC COMPANY
Franklin Park, Illinois

Courts and Commissions

N. C. Commission Resumes Study of Long Distance Rates

Three separate aspects of long distance service are being investigated by the North Carolina Public Utilities Commission, which on Aug. 15, resumed its general inquiry into telephone company operations (TELEPHONY, May 6).

The commission is looking into:

(1) Separations procedures used to allocate certain costs between interstate and intrastate service.
(2) Details of settlement arrangements between companies.
(3) The level of intrastate toll rates.

Testifying before the commission are: J. D. Porter, assistant vice president of Southern Bell Telephone & Telegraph Co.; Curtis Bushnell, consultant for the General Telephone System; Mervin H. Alexander, USITA settlements coordinator, and J. D. Kincaid of Southern Bell.

Scheduled for appearance are: R. L. Ohlson, assistant to the vice president—revenue requirements of General Telephone, and J. F. Havens, vice president-operations of Carolina Telephone & Telegraph Co.

Approve Loans By West Coast to Ore. Subsidiary

West Coast Telephone Co., Everett, Wash., on Aug. 22 was given permission by the Oregon Public Utility Commissioner to loan funds to Beaver State Telephone Co., Lakeview, Ore., an affiliated interest.

Beaver State serves 2,654 Oregon stations. Its entire voting securities are owned by the West Coast company.

The commissioner approved West Coast's proposal to loan funds from time to time to Beaver State as required for construction, expansion and improvements. The amount to be loaned is limited to not in excess of one per cent of West Coast's equity. (Equity is defined in the order as consisting of the par value of West Coast's outstanding common and preferred stock, capital surplus and earned surplus.)

If Beaver State is unable to repay the notes in cash, the commissioner approved its issuing stock to its parent for these funds.

The commissioner said: "Prior experience of utilities in Oregon shows that there is a continuing need for additional funds beyond the internally generated moneys of the utilities."

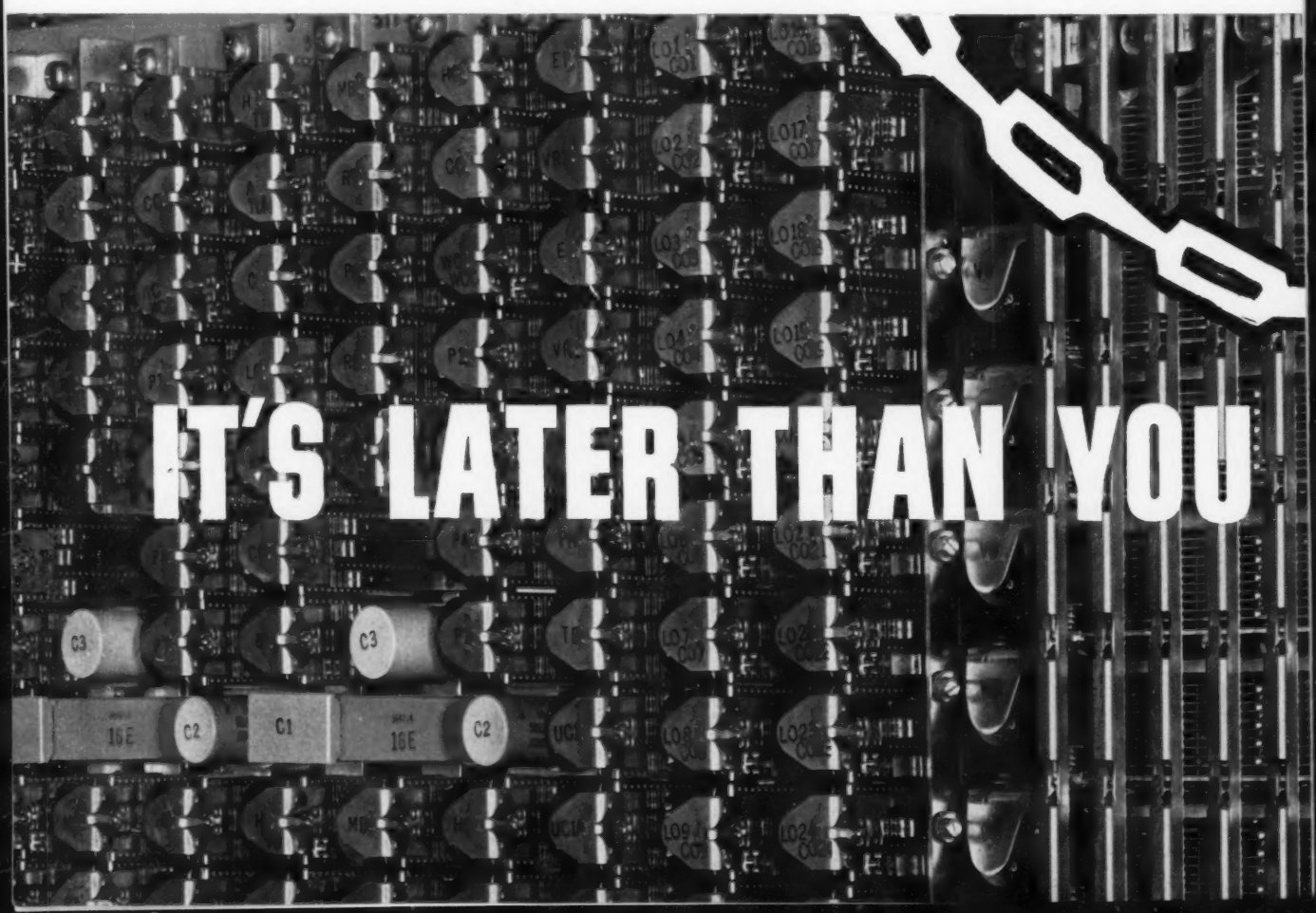
Two Sentenced for Burglary In Ill. Paystation Thefts

Two men, who pleaded guilty in Chicago, Ill. Criminal Court to charges of burglarizing seven telephone booths, were sentenced to prison under a new interpretation of the law, which holds that telephone booths are buildings and thefts from them are burglary not petty larceny (TELEPHONY, Sept. 2).

The two, Keith Adell and Barry Kalom, are the first to be sentenced under this new interpretation.

Judge John Gutknecht had ruled on Aug. 21 that an outdoor telephone booth is the same as a house in the eyes of the law.

He sentenced Adell to one to two



years in prison and Kalom to from one year to 18 months. Petty larceny is punishable only by a maximum of a year in the county jail.

OK Sales, Loans, Stock in Neb.; Set Purchase Hearings

The Nebraska Railway Commission on Aug. 23 issued orders as follows:

Permission was given to the Cuming County Telephone Co., Wisner, to purchase the Hamilton County Telephone Co., Aurora (TELEPHONY, Aug. 29). The sale agreement had been approved June 5 by the Hamilton County company's board of directors and subsequently on June 6 by the stockholders.

The commission issued a certificate of convenience and necessity authorizing the Cuming County company to serve the exchange areas of the Hamilton County company which provides magneto and common battery service to approximately 2,281 subscribers at its Aurora, Marquette, Phillips, Giltner and Doniphan exchanges and dial service to approximately 592 subscribers at its Hampton, Trumbull, Stockham and Hordville exchanges.

The commission also approved a loan of $1,360,000 obtained by the Cuming County company from the Rural Electrification Administration, with which it proposes to rehabilitate certain exchange properties of the Hamilton County company and convert existing manual exchanges to dial operation.

•

The Wood Lake Telephone Co. was authorized to purchase the properties of the Kilgore Telephone Co. (TELEPHONY, Aug. 26). V. L. Bradley, Menno, S. D., is the sole owner of the outstanding capital stock of the Wood Lake company and becomes the sole owner and operator of the Kilgore company.

The Wood Lake company was also given permission to issue 200 shares of common stock, par value of $50 per share, to Mr. Bradley with which to redeem notes in the amount of $17,480.07, issued to him for the purchase of the Kilgore properties.

The Wood Lake company proposes to modernize its Wood Lake exchange and convert it to dial operation. To complete this program, it has entered into a conditional sales contract with the Telecommunications Division of General Dynamics Corp. for the purchase of equipment up to an aggregate amount of $45,051.31 which will be paid for in monthly installments.

The company also proposes to issue its note to the Menno (S. D.) State Bank, in an aggregate amount of $10,000. The Great Plains Telephone Co., Scotland, S. D., of which Mr. Bradley is manager, has agreed to loan the company the sum of $15,500 with which to finance the dial installation at Wood Lake.

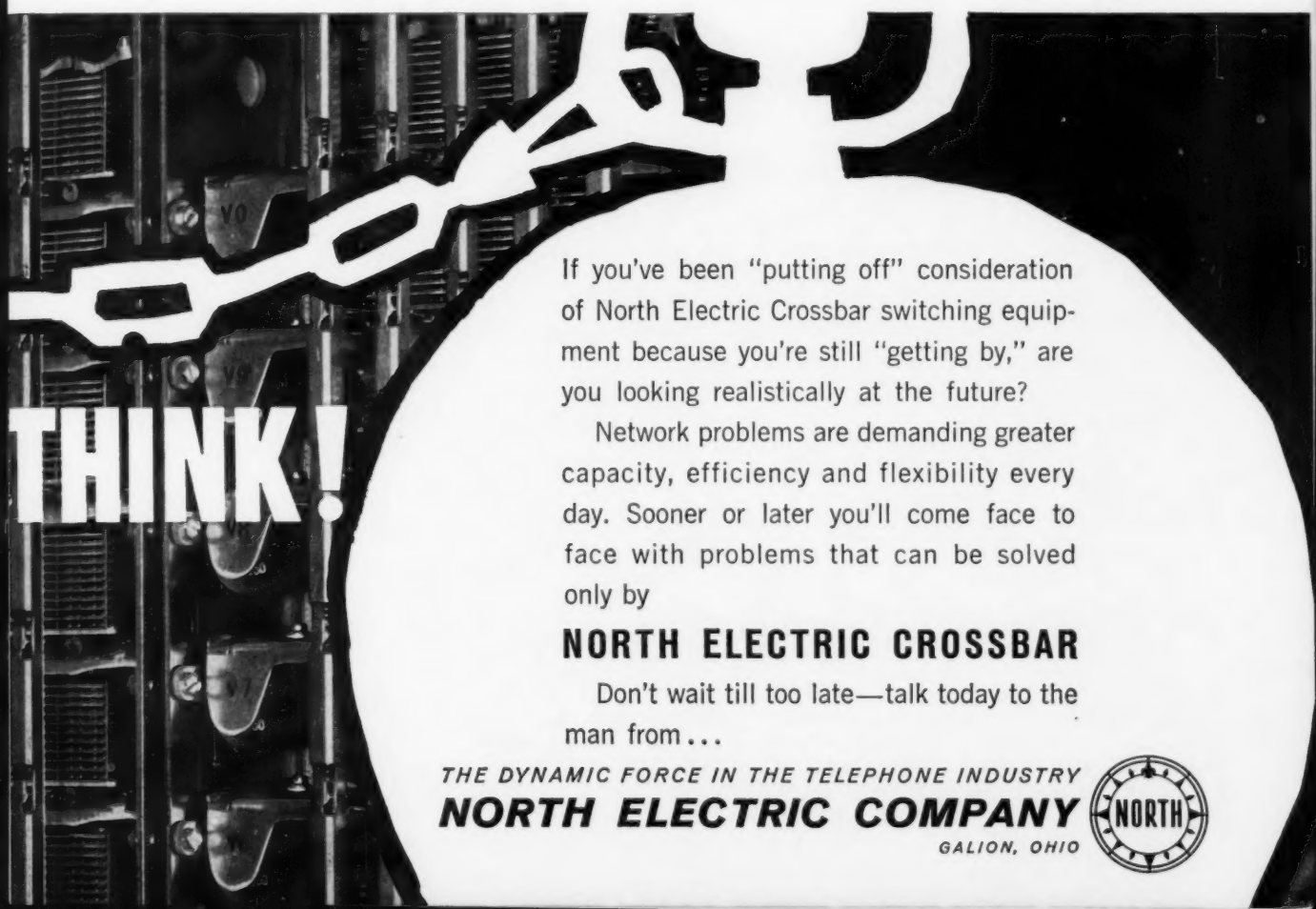
The company was also given permission to use a composite depreciation rate of 4% on its depreciable property, effective with the conversion to dial service. A certificate of convenience and necessity was issued to permit the Wood Lake company to serve the exchange area of the Kilgore company.

•

The General Telephone Co. of Nebraska, Columbus, was given permission to re-establish its Duncan exchange on Sept. 12 and to establish the following monthly rates:

One-party business	$10.90
One-party residence	5.90
Two-party residence	5.40
Rural business	7.75
Rural residence	5.00

The Duncan exchange formerly was served with multi-party service from Columbus. The exchange at Duncan is being re-established in response to


THINK!
If you've been "putting off" consideration of North Electric Crossbar switching equipment because you're still "getting by," are you looking realistically at the future?
Network problems are demanding greater capacity, efficiency and flexibility every day. Sooner or later you'll come face to face with problems that can be solved only by
NORTH ELECTRIC CROSSBAR
Don't wait till too late—talk today to the man from...
THE DYNAMIC FORCE IN THE TELEPHONE INDUSTRY
NORTH ELECTRIC COMPANY
GALION, OHIO
NORTH

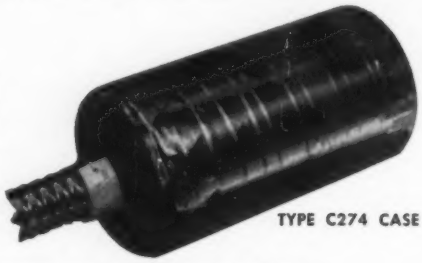
CEECO TYPE C274

GALVANIZED STEEL CASE ASSEMBLIES

FOR DIRECT EARTH BURIAL INSTALLATION.
CONTAINING FOUR TO FOUR HUNDRED SIXTY UNITS.

These assemblies can be equipped with loading coils, capacitors, inductors and MF units.

NOTE:
These assemblies are completely covered with plastic tape to protect all metal from electrolysis and other soil corrosive agents.



TYPE C274 CASE

- LEAD STUB ASSEMBLIES ARE PRESSURIZED.
- PLASTIC STUB ASSEMBLIES ARE SEALED IN THERMOPLASTIC COMPOUND TO INSURE PROTECTION FROM MOISTURE.

Write us for assistance on your loading problems.

Ceeco assemblies are sold by your telephone equipment supplier.

COMMUNICATION EQUIPMENT & ENGINEERING CO.

5646 West Race Avenue • Phone EStebrook 8-3109 • Chicago 44, Illinois

GENERAL MACHINE PRODUCTS COMPANY, INC.

Old Lincoln Highway at Pa. Turnpike, Trevose, Pa.

C-R POWER REEL

SLACK PULLER

CABLE FEEDER

GMPCO

AERIAL TENTS
CABLE BENDERS
CABLE BLOCKS
CABLE LASHERS
COAXIAL CABLE TOOLS
LASHING WIRE
CLAMPS AND GRIPS
PORTABLE & POWER REELS

Graybar Distributed by Graybar Electric Company

PRESSURE TESTING KIT

COMPOUND

B, C, D, E, & G CABLE LASHERS

Special Purpose Tools To Specifications — Catalog on Request

Over 600 various items of Line Construction Tools, Maintenance & Pressure-Testing Equipment in stock for immediate shipment

public demand for improved service. The company personally interviewed subscribers in this area and found that the majority favored exchange service from Duncan and the proposed rate schedule.

Extended area service will be provided between Duncan and Columbus. Cost of this improvement project is estimated at $33,000.

•

The Northwestern Bell Telephone Co. was authorized to revise its exchange area boundary map for its Elwood exchange to permit it to serve an area formerly served by the Smithfield Mutual Telephone Co. and the Bertrand Telephone Co. (TELEPHONY, May 20). Subscribers of the recently-dissolved Smithfield company had met with representatives of Northwestern Bell and the Bertrand Company and a plan had been agreed upon. Smithfield subscribers will be served from the Elwood exchange.

•

The Northwestern Bell Co. was also given permission to revise the base rate areas of the Bennington, Valley and Waterloo exchanges. This was done to compensate for residential growth. The annual revenue effect of exchange mileage charges was stated to be minor. No customer's charge will be increased.

•

Hearings were to be held on Sept. 1 by the commission on a request by the Cambridge Telephone Co. for authority to borrow money and to acquire the property of the Bartley Mutual Telephone Co.

A Sept. 7 hearing date was set on an application of the Cornhusker Telephone Co., Hay Springs, to purchase and operate the Indianola Telephone Co.

General Agrees SW Bell Should Serve Ark. Area

General Telephone Co. of the Southwest on Aug. 21 told the Arkansas Public Service Commission that it did not want to take over the Tupelo and Weldon areas which had been assigned to Southwestern Bell Telephone Co. (TELEPHONY, Sept. 2).

Residents in the exchange area had asked to be served by General's Augusta exchange. The commission had assigned them to Southwestern Bell's Newport exchange area.

Wis. Bell Asks EAS With North-West Company

The Wisconsin (Bell) Telephone Co. has filed an application with the Wisconsin Public Service Commission ac-

cording to an Aug. 21 report, asking that its Waukesha exchange have extended area service with the Genesee and North Prairie exchanges of the North-West Telephone Co., Tomah.

It also asked to eliminate long distance charges on calls between its Waukesha and Pewaukee exchanges and between Waukesha and its Sussex exchange.

Telephone, TV Enable Nationwide Auction

A coast-to-coast closed circuit TV and telephone auction of federal government surplus equipment was held on Aug. 30 through sales centers in New York City, Atlanta, Columbus, Fort Worth, Denver and San Francisco.

As each item was sold, a color slide of it was flashed on the screen in each center. Bidding was handled through a telephone hookup with Atlanta serving as the control point and coordinator for the auction.

Property originally costing 12 million dollars and presently stored in 48 military installations was put on the block.

Tex. ITPA Chapter Holds Meeting At Dude Ranch

The annual summer meeting of The Independent Telephone Pioneers Association—Texas Chapter, was held at the Mayan Ranch at Bandera, Tex., which is located in the hill country in central Texas. Members, auxiliary members, their families and friends attended.

Between recreations that are common to dude ranches in this Texas area — fishing, horseback riding, cookouts — an official board meeting was held.

Morris Bateman, vice president of the chapter, made all the arrangements for the weekend meeting.

Among distinguished guests present was Rep. James Cole, son of Mr. and Mrs. Dee Cole. Dee Cole is president of the Texas chapter.

A group of bridge and domino players seem to be having a wonderful time at meeting of Texas ITPA chapter.

Neither wind nor rain shall keep this Messenger...

. . . Wire from giving long and dependable service. The reason is simply that CF&I Galvanized Steel Strand is built to give better performance — the strength to support heavy cable . . . the pliability that means easy installation . . . and the weather-resistance that shrugs off the foulest operating conditions.

Drawn from specially selected steels, every wire in CF&I Galvanized Strand is hot-dipped in zinc to assure a tough, corrosion-resistant coating. CF&I Galvanized Steel Strand meets ASTM specification A-122 and is available in 3- and 7-wire constructions. Or, if you desire, special constructions can be manufactured to meet your requirements.

Call your CF&I sales office for complete details and speedy delivery. 8131

The Colorado Fuel and Iron Corporation
Denver • Oakland • New York
Sales Offices in All Key Cities

SW Bell Telephone Announces Personnel Realignment

W. E. Fisher has been appointed assistant vice president—operations for Southwestern Bell Telephone Co. at St. Louis.

Mr. Fisher succeeds Norman Gessley who has resigned to accept a position as vice president—staff with Pacific Northwest Bell Telephone Co. at Seattle.

R. Ray Shockley will replace Mr. Fisher at Dallas as general plant manager for Southwestern Bell's north Texas area. Mr. Shockley moves from a similar position at Topeka, Kan.

W. F. Thompson Jr., division plant superintendent at Kansas City, will succeed Mr. Shockley in Topeka.

Melvin B. Kleypas has been appointed Kansas City division plant superintendent. He is in a similar job at Oklahoma City and will be succeeded by Donald L. Smith, now plant supervisor for the company at Houston, Tex.

The changes are effective Sept. 1.

Mr. Fisher has been general plant manager at Dallas since early 1960. He started with Southwestern Bell as an installer in St. Louis in 1940 and later served as division plant superintendent at Kansas City.

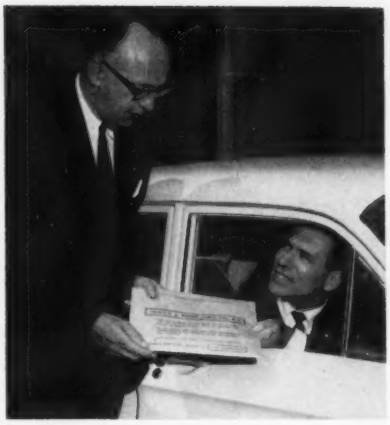
Mr. Gessley also began his telephone career as a station installer for Southwestern Bell at St. Louis. He later was division plant superintendent at Dallas and St. Louis and general plant manager for the company's South Texas area. He was appointed assistant vice president earlier this year.

Joining Southwestern Bell as a lineman in Oklahoma in 1937, Mr. Shockley rose through the company's plant department and was appointed division plant superintendent at Tulsa in 1957. He has been general plant manager in Kansas since 1959.

Mr. Thompson began his telephone career in Southwestern Bell's plant department at Dallas in 1937. He later worked in San Antonio and Topeka, Kan. and was named division plant superintendent at Wichita, Kan. in 1956. He moved to a similar position at Kansas City last year.

General of Michigan Issues Home Survival Kits

General Telephone Co. of Michigan, Muskegon, on Aug. 30 mailed information on home preparedness and family survival to its 2,500 employes.

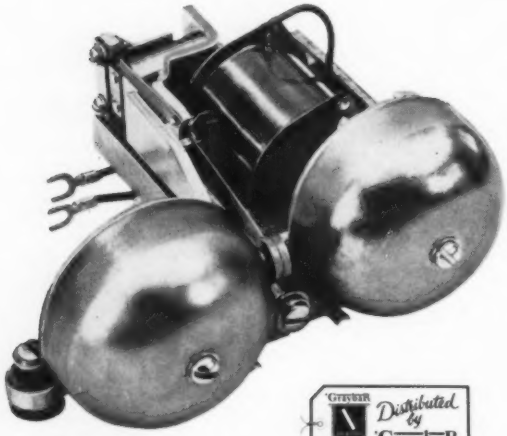


K. W. Benckert (left), General Telephone Co. of Michigan operating vice president, checks one of the family-and-home survival kits the company is mailing to 2,500 employes. Company safety supervisor Frank E. Johnson then escorted the mailing—which covers preparation for atomic attack, tornadoes or hurricanes—to the post office.

Aimed at alerting employes and their families to be prepared for atomic attack, tornadoes or hurricanes, the packet includes pamphlets on: family fallout shelters, emergency sanitation at home, facts about fallout protection,

USI Straight Line RINGERS

Recognized Excellence in Ringers



Versatility: The USI Straight Line Ringer is designed to fit any telephone which uses a WEC4A Ringer. All basic parts are interchangeable with the famous USI Multi-Frequency Ringer.

Sensitivity: High impedance with corresponding low power requirements means a reduction of interference in adjacent circuits and low attenuation in the talking circuit. USI Ringers are the industry's basis for comparison.

Economy: Durability of parts, complete customer satisfaction and lack of service calls mean the highest investment return for you. Why not do as countless companies have done? Specify USI ! !

UNITED STATES INSTRUMENT CORP.

CHARLOTTESVILLE, VIRGINIA

first aid emergency action, fire-fighting for householders, Conelrad instructions, civil defense home food storage program, home protection, and a wallet card with air raid instructions.

K. W. Benckert, company operating vice president, pointed out: "Home preparedness is vital to everyone, but especially so for those of us in the communications business who will be called on to keep messages moving in the event of an enemy attack or a natural disaster."

Yellow Pages of West-East Berlin Startling Contrasts

In an article written by Karl H. Mack for the UPI, which appeared on Aug. 15 under the heading — "It Just Ain't So—Berlin's Phone Books Give Lie to Soviets"—the author points out some sharp contrasts between East and West Berlin, revealed, he says, by the German counterpart of our Yellow Pages.

For purposes of comparison, it is important to know that, population-wise in early 1961, West Berlin was a city of 2,223,800 persons; whereas the population of East Berlin was 1,200,000.

From his examination of the East Berlin commercial branch telephone book, (designated by the Communists as printed in a "people's own printing shop"), author Mack compared drivers' schools in both the East and West sectors. The telephone book shows only three such schools in East Berlin, but in West Berlin, there are 168 listings.

While West Berlin boasts 305 gas stations, there are only 58 listed for East Berlin. Of the 58 communist-run stations of the East sector, 43 were installed by the Communist "Minol" gas company, whose product, wags are saying, should be called "Minor," because of its inferior quality.

Other contrasting figures which the author states show how much the Communist-controlled city is *not* accomplishing, line up as follows:

	East Berlin	*West Berlin*
Travel agency offices	12	226
Dairy products shops	83 (milk, other products not always available)	900 (milk daily)
Libraries	3	95
Barber shops	c.500	1,500
Laundries, dry cleaners	178	473

Pacific Northwest Elects

Pacific Northwest Bell Telephone Co. has announced the election of F. M. Mitchell as vice president in charge of public relations and revenue, effective Sept. 1. Thomas E. Bolger, who was chief engineer with Northwestern Bell Telephone Co., takes over Mr. Mitchell's post as vice president and general manager of the Oregon area. Also elected was Norman Gessley of St. Louis, Mo., to be vice president (staff).

Book Review

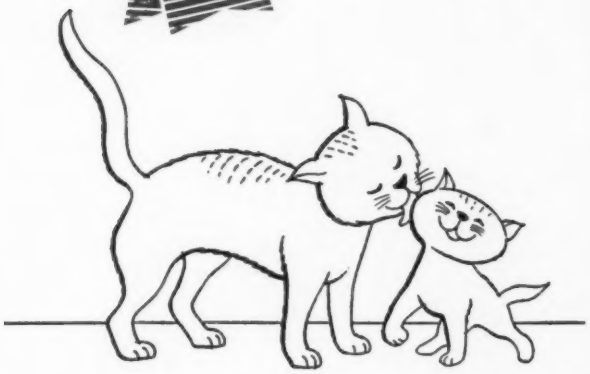
"Long-Term Financing," by John F. Childs; 369 pages; 8½x11¼; $15.00.

"The goal of long-term financing management should be to handle all parts of finance," writes John F. Childs in his new book, "Long-Term Financing," "so that the owners, or stockholders, will receive the greatest economic benefit over the long run."

"Long-Term Financing" shows step by step how to insure a company's success by establishing financial policies on which to base long-term growth. Beginning with detailed analyses of capital structure and dividend policy, the book discusses "The financial community: Who does what," "Selling senior securities," "Selling common stock," "Investor relations," and a final section on "The tests of good financial management."

John F. Childs, vice president of the Irving Trust Co. in New York City, conducts a financial seminar for corpo-

PRO[illegible] BEST for ease of maintenance



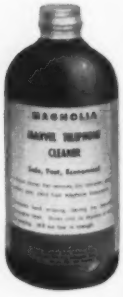
A combination of glass, enamel, anodized aluminum and simplicity of design keep maintenance problems to an absolute minimum.

the BN Booth

For full particulars, consult your distributor or write direct ...
Benner-Nawman, Inc., 3421 Hollis Street, Oakland 8, California.
a B-N booth is a busy booth!

MARVEL

TELEPHONE CLEANER



Magnolia Marvel Telephone Cleaner — For cleaning old type telephones—Removes dirt, corrosion, grease, carbon, gum, paint from telephones — Weight 40 pounds — $24.00 per case.

PACKED
24 PINTS PER CASE
CODE Mp 222

NEW

GENERAL TELEPHONE CLEANER

New General Telephone Cleaner for cleaning Plastic Telephone Cases. Weight 40 pounds.

PACKED
24 PINTS PER CASE
CODE G-10

MAGNOLIA CHEMICAL CO., INC.
CHICAGO • LAFAYETTE, IND. • TAMPA • DALLAS
LOS ANGELES

Order from your Telephone Supply Distributor

rate executives, many of whom assisted and advised the author in preparing "Long-Term Financing."

The book is liberally illustrated with charts, graphs, and brief summaries of the points made, as well as being fully indexed.

It can be ordered from Prentice-Hall Inc., Englewood Cliffs, N. J.

Front Cover

Pictured on front cover as they attended a conference of the USITA Traffic Committee and Bell System representatives are, clockwise: A. W. Lambert, A. B. Walrath, W. Albertson, H. J. Kleinhammer, L. Birch, D. D. Childers, E. McWain, J. B. Noggle, L. W. Cleveland, W. Shale, F. Seiler and L. M. Raby.

Agenda for the conference follows:

(1) Communication between AT&T and The USITA Traffic Committee regarding traffic practices of industrywide significance.

(2) Engineering of interexchange circuits.

(3) Plans of AT&T co. with regard to M-TWX.

(4) Traffic aspect of WATS. (Wide Area Telephone Service).

(5) New developments in traffic practices.

(6) Use of area codes with long distance calling.

(7) Direct dialing of person-to-person calls.

(8) Traffic aspects of traffic service position.

(9) Access codes — Numeral "0" and "1"—Use of standard codes, i.e., local information code (411). Universal information code (555).

(10) Uniformity of tones and recorded announcements.

(11) DDD service improvement.

(12) Toll abuse — Investigations of false use of credit cards and third number charges. Methods and practices to expedite apprehension.

(13) Procedures for taking supplementary peg counts.

(14) QZ numbers for special billing.

(15) National defense — arrangements and procedures.

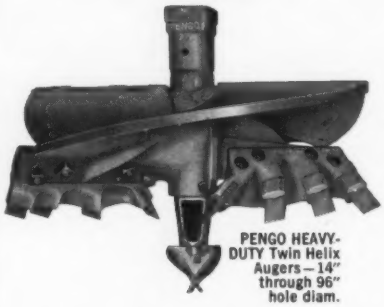
(16) Developments in mark-sensing of toll calls.

(17) Centrex.

(18) Use of concentrators.

PENGO AUGERS

Save you money 4 ways



PENGO HEAVY-DUTY Twin Helix Augers—14" through 96" hole diam.

1 **BORE FASTER**...put real "teeth" in earth drilling, save wear and tear on your diggers.

2 **STAY ON THE JOB LONGER** ...all wearing parts replaceable in the field; no down-time for shop welding.

3 **COST FAR LESS TO MAINTAIN** ...reversible teeth cost only 90¢ each, pilot bit only $8.00. Parts interchangeable on all PENGO augers you are using...less inventory!

4 **A SIZE AND TYPE FOR EVERY DRILLING JOB**

PENGO BORING HEADS for welding to your present auger flights.

PENGO FLIGHT AUGERS and ANCHOR AUGERS—6" through 36" diam.

IF IT'S AUGERS YOU WANT, WE HAVE 'EM—JUST ASK US!

PENGO Augers and Boring Heads are available for all popular types of diggers, from light-duty post hole and farm tractor machines to the largest heavy-duty earth drills. Write today for free catalog; please address Dept. 108.

13-B

PETERSEN ENGINEERING CO., INC.
Santa Clara, California

TAKING PBX PEG COUNT

Continued from page 28

A survey should not be taken preceding or following a holiday, other than a Saturday or Sunday.

In general, all PBX traffic counts should be on a half-hour schedule. They should usually cover the hours from 9 a. m. to 12 o'clock noon and from 1 p. m. to 4 p. m. When it is known that the traffic is heavy during the full business day, the count should be extended to cover the entire day. Occasionally, hotels may ask for a count of their evening business in order to discover if the switchboard traffic is receiving the proper attention during the evening hours. To determine the most appropriate time and period for conducting a survey, the customer management, his chief operator or attendant should be consulted.

When available, portable registers should be used on all PBX traffic counts. When such registers are not to be had, tally sheets may be substituted.

Counts on Conversions

On counts taken for the purpose of converting a PBX from manual to dial equipment, a series of holding time intervals should be taken on incoming to extension, outgoing and extension to extension calls. The holding time interval should cover the time the line signal appears until the disconnect signal operates on the cord supervisory lamp. As many of these intervals should be taken as is possible in the time covered by the study. Holding time intervals can be taken as an overlap operation by the person conducting the count. A standard 60-second stop watch should be used to obtain the holding time.

The customer should always be notified of the date a proposed study will be taken. He should understand that a telephone company employe will take meter readings and observe his attendant at work and the date and hours she will be there.

Trunk or switch usage counts at dial installations are determined by manual or mechanical means. The counts are made by tabulating the number of trunks or switches in use in various equipment groups. Any group in which a trunk or switch is out of order, or otherwise not available for service, should be excluded from the record and an explanation made on the peg count form of the reason for the deletion.

Manual Checking of Dial

The manual method of checking traffic in a dial system PBX involves

TBM
SERVICE
ENTRANCE
MAST
for
OUTDOOR
TELEPHONE
BOOTHS
U.S. Patent No. 2,977,402
PUBLIC
TELEPHONE
BOOTH
TELEPHON
Model TBM Mast provides complete service entrance facilities for outdoor telephone booths with the definite plus advantages of lower cost and easier installation. Raises power lines for specified ground clearance.
FITS MOST BOOTHS
Meets Code Requirements
LOOKS BETTER The TBM Mast is engineered for the job. Adds to the appearance of any booth.
LASTS LONGER Heavy gauge steel tubing used throughout for life-time service. Only heavy duty fittings used.
COSTS LESS Actual installations show savings up to two-thirds over conventional installations.
REMOVABLE Can be moved from one location to another. Simply disconnect lines and pull mast out of ground sleeve.

Utility Service Co., Inc.

1620 THIRTEENTH STREET RACINE, WISCONSIN

TAKE A BIG STEP TOWARD SAFETY WITH DUO-SAFETY LADDERS

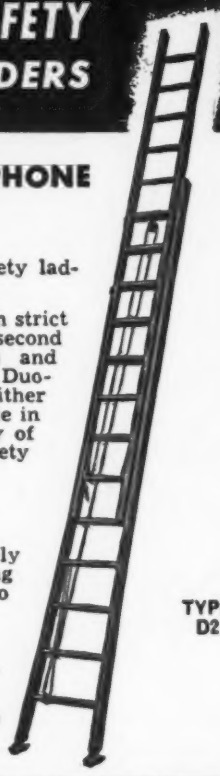
... CUSTOM DESIGNED FOR TELEPHONE MAINTENANCE WORK!

Here's one fine example of the many Duo-Safety ladders ideal for telephone maintenance work.

Type D — a truly great extension ladder built in strict accordance with safety regulations. Rungs are second growth hickory, reinforced with steel rods and equipped with special automatic locks and Duo-Safety's famous Safety Shoes. Made with either straight or parallel side rails, Type D is available in one, two or three sections — in a large variety of sizes. Write for free catalog on all Duo-Safety ladders.

IMMEDIATE DELIVERIES!

Duo-Safety ladders will be shipped immediately upon receipt of order! A planned stock-piling program assures really fast action — there's no delay the Duo-Safety way!



TYPE D2

For Information, Contact Your Supply House, or

DUO-SAFETY LADDER CORP.
809 Ninth Street • Oshkosh, Wisconsin

CONDEX* MULTIPLE CONCRETE CONDUIT

Special fittings—miters—short lengths—expanded web sections available, also adapters to claytile, transite and fiber duct.

9 DUCT FORMATION ON JOB SITE

American Concrete Pipe Co., Sub. of Am. Pipe and Construction Co., 2025 S. Seventh St., Phoenix, Ariz. Tel: AL 2-7566
American Pipe and Construction Co., 4635 Firestone Blvd., Southgate, Calif. Tel: LOrain 4-2511
American Pipe and Construction Co., 101 Alquire Rd., Hayward, Calif. Tel: JEfferson 7-2072
American Pipe and Construction Co., 518 N.E. Columbia Blvd., Portland, Ore. Tel: BUtler 5-2531
Concrete Conduit Corp., 130-01 Northern Blvd., Corona, N. Y. Tel: ILlinois 7-1515
Chicago Pre-Cast Products Corp., 29W629 North Aurora Rd., Naperville, Ill. Tel: EL 5-2700—2701
Denver Concrete Products Co., 5020 Marshall, Arvada, Colo. Tel: HA 2-4202
Eastern Pre-Cast Corporation, 675 Main St., Tullytown, Pa. Tel: Windsor 9-3750
Elmore Concrete Products Co., Division of North Star Concrete Co., Elmore, Minn. Tel: Elmore 52
J. E. Evans Concrete Products Inc., Cleveland, Ohio. Home Office: Indianapolis, Ind. Tel: WAlnut 5-5301
J. E. Evans Concrete Products Inc., Shelbyville, Ind. Tel: WAlnut 5-5301
Neff Concrete Products Co., 711 Section St., Danville, Ill. Tel: Hickory 6-1016
PRE-CON Limited, Orenda Rd., Brampton, Ontario, Canada. Tel: HUdson 1-3492 (Toronto)
Pre-Con of Quebec, Ltd., Montreal, Quebec, Canada. Home Office: Brampton, Ont. Tel: HUdson 1-3942 (Toronto)
T.E.L. Pre-Cast Products Corp., 1 Industrial Ave., Edgewater, Florida. Tel: GArden 8-9881
Utah Concrete Pipe Co., 379—17th St., Ogden, Utah. Tel: EXport 6-1171
For information regarding CONDEX* Multiple-Duct Concrete Conduit, call or write your local producer, or the parent company.
*Registered Trademark

CONDEX
GAGNE ENTERPRISES, INC.
29W 629 NORTH AURORA ROAD
NAPERVILLE, ILLINOIS
EL 5-2700-2701

visual observation of switches in use. A switch is considered in use when in an off-normal position. The count of off-normal switches should be taken at regularly repeated intervals of two minutes. Each set of observers should start at the prescribed time and the groups always should be observed in the same sequence and at a uniform speed to assure accuracy.

The manual trunk, or switch usage count, should be made during the busy hours only. The busy hour may be obtained from the records of previous studies taken at the PBX. If no records exist, it can be safely assumed that the busy hour will fall somewhere between 9 a. m. and 11 a. m., and the count should cover these two hours.

The trunk usage count may be made from one position of a switchboard, if busy lamps or visual signals are provided. If it doesn't have such equipment, the cord plugs in trunk jacks must be counted on all positions of the switchboard for the incoming calls and the first selector switches which have lifted to the ninth level must be tabulated for out-going calls. The count should start exactly on the hour. Upon completion of the first round, the process should be repeated every two minutes until the entire period of the count is covered. For example, should the count start at 8 a. m., the second lap would start at 8:02, the third at 8:04, and so on to the last lap at 8:58 a. m.; which is the end of the busy hour counting period.

Counting Devices Available

There are several types of mechanical devices in the market which automatically count the number of busy trunks or switches in use. When such apparatus is available, it can be used to good advantage in the interest of securing complete, accurate and representative traffic data and in the conservation of traffic-study manhours.

Fig. 1 shows the basis coefficient of each class of PBX switchboard calls and additions that should be made for supplementary work and deductions for work saved. For each class of call handled by the attendant, the applicable coefficient is arrived at by modifying the basic quantity so it will conform to the conditions encountered at the PBX switchboard under study.

The principal items such as incoming to extension calls, long distance calls, etc., should be counted on portable type registers, if available. All peg counts can be detailed on a form similar to *Fig. 2* and summarized on a form such as shown in *Fig. 3*. The "Totaling

(Continued on page 52)

NOW THERE ARE FOUR ABC BOOKS FOR YOUR TRAINING PROGRAM

VOLUME FOUR OF THE ABC OF THE TELEPHONE BOOKS features OUTSIDE PLANT CONSTRUCTION. Included are practical articles on: Planning additions to the outside plant; selecting, placing, guying, anchoring of poles; installation of cable plant; open wire construction; transpositions; multi-pair distribution wire; line concentrators; plus three articles on stimulating sales in a changing market and keeping up with new ideas . . . 25 CHAPTERS

THE FOUR ABC OF THE TELEPHONE BOOKS are reprinted from the popular series of articles by Frank E. Lee, currently appearing in TELEPHONY. These books are easy to read. Fundamentals are explained in easy-to-understand language. They are an invaluable aid in developing a thorough knowledge of the telephone job.

Many telephone companies are using the ABC Books . . . Over 35,000 copies have been shipped to large and small companies all over the world.

VOLUME 1...21 CHAPTERS
Basic Circuits, Transmitters, Receivers, Induction Coils, Generators, Ringers, Relays, Line Protection, Dials, Automatic Switching, Principles of Protection, Drop Wire Installation.

VOLUME 2...20 CHAPTERS
Installation and Maintenance of Sub-Station Protection, Station Wire Installation, Subscriber Station Installation, Fault Locating, Relay Circuit Analysis, Loading Coil Theory.

VOLUME 3...31 CHAPTERS
Storage Batteries, Metallic Rectifiers, Electronic Tubes, Key Equipment, Carrier Circuits, Community Dial Offices, Central Office Service Objectives, Exchange Plant Trouble Reports and Analysis, Central Office Cross-connections, Routine Maintenance Schedules, Circuit Drawings, Wiring Diagrams.

Now you can order a set of FOUR ABC BOOKS for each of your men. Ninety-seven chapters—393 pages (8½x11) and hundreds of illustrations in the four volume set. This is the big telephone training value.

Order any volume separately or combine your requirements of the four volumes to take advantage of the lower quantity prices on this schedule.

NO. OF COPIES	VOL. 1	VOL. 2	VOL. 3	VOL. 4
1— 10	$1.50 ea.	$1.50 ea.	$2.50 ea.	$2.50 ea.
11— 50	1.35 ea.	1.35 ea.	2.25 ea.	2.25 ea.
51— 200	1.20 ea.	1.20 ea.	2.00 ea.	2.00 ea.
201— 500	1.05 ea.	1.05 ea.	1.75 ea.	1.75 ea.
501—1000	.95 ea.	.95 ea.	1.60 ea.	1.60 ea.

USE THIS COUPON — ORDER NOW

PLEASE SEND THE FOLLOWING COPIES:

Vol. 1____ Vol. 2____ Vol. 3____ Vol. 4____

Name_____

Company_____

Street_____

City_____ Zone____ State____

Frank E. Lee, Publisher

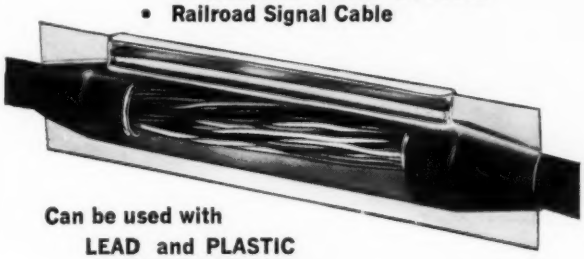
1751—183rd Street **Homewood, Illinois**

SEMPER-SEAL

SPLICE ENCAPSULATION and CABLE PLUGGING SYSTEM

Proven Method for use on all types of

- **Multi-conductor Communications Cable**
- **Fire and Police Alarm Cable**
- **Traffic Control Cable**
- **Cathodic Protection Cable**
- **Co-axial and Video Pair Cable**
- **Railroad Signal Cable**



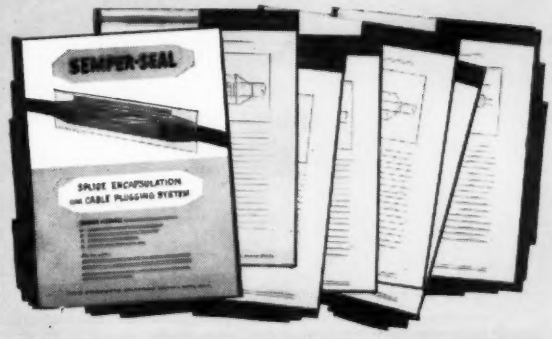
Can be used with

LEAD and PLASTIC JACKETED CABLE

PAPER, PLASTIC, PULP and RUBBER CONDUCTOR INSULATION

Ideal for Aerial, Duct, Direct Earth Burial and Submerged Installations

NEW Semper-Seal application data and catalog information



C&S PRODUCTS COMPANY

Windsor Locks, Connecticut

NAtional 3-2450

C & S PRODUCTS COMPANY
Windsor Locks, Connecticut
SEND ME the latest Semper-Seal information.

Name.....Title.....

Company.....

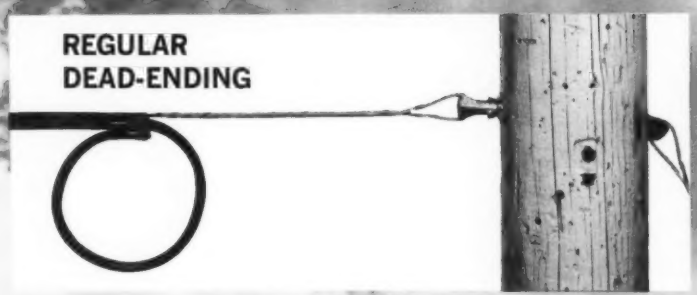
Address.....

.....

FIGURE Preformed

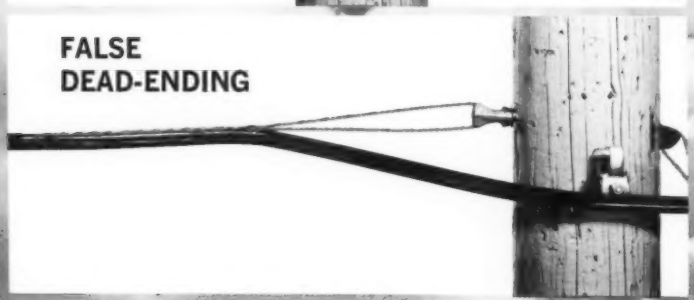
TRADEMARK

REGULAR
DEAD-ENDING

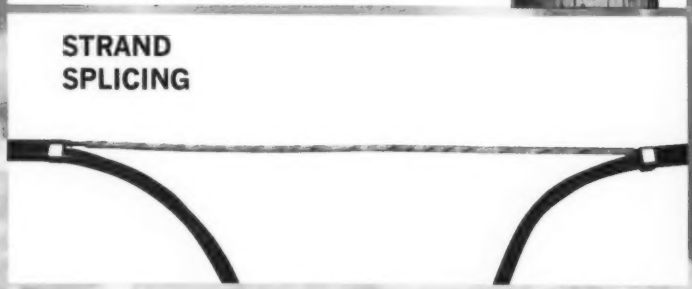


DOUBLE
DEAD-ENDING

FALSE
DEAD-ENDING



STRAND
SPLICING



PREFORMED Telephone Accessories can be obtained through leading local and national telephone suppliers.

Made in accordance with or for use under one or more of the following U. S. Patent Numbers: 2,691,865; 2,761,273; other patents pending.

You can look up to Preformed

FOR FIGURE EIGHT

Integrated Messenger Cable

PREFORMED attachments **increase** the advantages of integrated messenger cable. Because these products eliminate cutting of the supporting strand, the strand and cable continue to function as an integrated unit. Installation is simple — no strand to thread, no jaws to seat; safety is visible — no bolts to tighten, no clamps to slip.

PREFORMED Dead-Ends and Strand Splices are designed to hold the full rated strength of the strand and provide fast, inexpensive installation wherever needed.

Secure these increased savings **now** on integrated messenger cable installations — figure PREFORMED for Figure "8"!

PREFORMED LINE PRODUCTS COMPANY

5349 St. Clair Avenue • Cleveland 3, Ohio • UTah 1-4900 (216*)
600 Hansen Way • Palo Alto, California • DAvenport 4-2561 (415*)

*Long-Distance Direct Dialing Area Code

Sheet," in *Fig. 4*, is a handy method for totaling any type of traffic or switch count and computing the average day's hourly load. The two columns under the heading "HOUR" will easily point out the busy hour.

Call Headings Explained

A call handled by an attendant at the average PBX switchboard will come under one of the headings that follow (Care should be exerted to see that the attendant receives all the credit due her for the work she does):

ITEM 1. Incoming to Extension, other than department stores.

(a) Count each incoming call to an extension, including calls to Information, chief operator, requests for enlightenment and all other calls handled by the attendant. Even though the extension telephone shows "busy," the call should be counted.

(b) Count each transfer of an originating incoming call to another extension as an additional call.

(c) Count each completion or attempted completion of a call previously established to a supervisor, chief operator, information, etc., as an incoming to extension call.

NOTE: The incoming to extension call coefficient covers the work an attendant performs to complete an ordinary call but does not take into account any dialing the attendant may have to do to complete the connection to the extension. Should the attendant do extra work on the call, such as dialing the extension number, refer to PBX directory, deliver a message, etc., the additional work should be credited under the items listed under "Allowance for Operating Methods," as well as under its basic classification. In no case should any deduction be made because the operator does not perform a certain one of the "allowance-for-operating-methods" functions.

ITEMS 2 and 3: Also includes calls disposed of by the attendant without connection to an extension, such as requests for information, to report a difficulty, etc., as well as assistance calls in dial exchanges.

ITEM 4: Comprehends calls accepted by the attendant for valet, laundry, etc., which she transmits via Telautograph.

ITEM 5: Takes into account all calls to guests made by the attendant at a specified hour.

ITEM 6 and 8: Count each subsequent attempt as one additional call.

ITEM 7 and 9: Count each subsequent attempt as one additional call.

ITEM 10: Those calls on which the toll operator voluntarily calls back to give time and charges to the attendant at hotel PBX's.

ITEM 11: Attendant records and passes a long distance call to the toll operator.

ITEM 12: Attendant records and passes a long distance call to the toll operator, including receiving time and charges.

Allowance for Operating Methods

ITEM 13: Applies to those calls on which time and charges are quoted at the end of conversation on specific requests of attendant or extension.

ITEM 14: Record when a hotel attendant passes room number to toll operator.

ITEM 15: Allowance for attendant receiving and recording time and charges at end of conversation.

ITEM 16: Is not applied in addition to Item 19.

ITEM 17: Includes those cases at hotel PBX's where attendant verifies name and room number with either floor clerk or directory operator, or verifies with floor clerk the absence of guest from room.

ITEM 18: Count each time attendant refers to exchange directory to complete outgoing call.

ITEM 19: Count each time extension user hangs up after placing call. Do not count on toll calls as this time is included in the toll unit.

ITEM 20: This applies to those calls on which the attendant records a message on a form delivered by other means than over the telephone. Should the message be delivered by telephone it should also be counted under Item 21.

ITEM 21: (a) Count those calls the

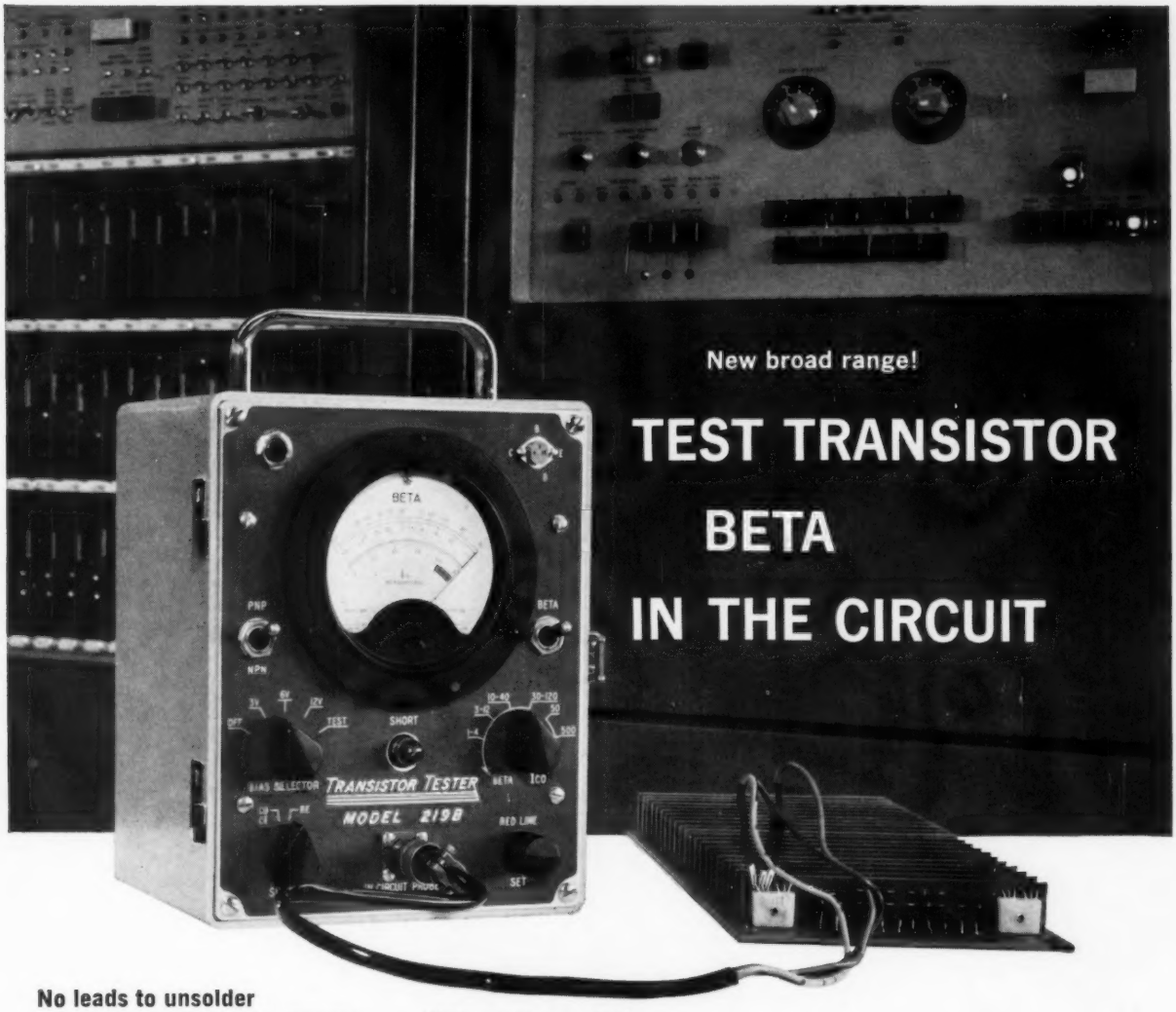
(Continued on page 55)

TOTALLING SHEET

INSTALLATION AND LOCATION | EQUIPMENT GROUP | DATE

LINE	HOUR	FIRST DAY	SECOND DAY	THIRD DAY	FOURTH DAY	FIFTH DAY	TOTAL DAYS	AVERAGE HALF HOUR	TOTAL HOUR	HOUR		TRUNKS REQD
1	5:00 4:30									5:00 4:00		
2	4:30 4:00										4:30 3:30	
3	4:00 3:30									4:00 3:00		
4	3:30 3:00										3:30 2:30	
5	3:00 2:30									3:00 2:00		
6	2:30 2:00										2:30 1:30	
7	2:00 1:30									2:00 1:00		
8	1:30 1:00										1:30 12:30	
9	1:00 12:30									1:00 12:00		
10	12:30 12:00										12:30 11:30	
11	12:00 11:30									12:00 11:00		
12	11:30 11:00										11:30 10:30	
13	11:00 10:30									11:00 10:00		
14	10:30 10:00										10:30 9:30	
15	10:00 9:30									10:00 9:00		
16	9:30 9:00										9:30 8:30	
17	9:00 8:30									9:00 8:00		
18	8:30 8:00											
19												
20												

FIG. 4



New broad range!

TEST TRANSISTOR BETA IN THE CIRCUIT

No leads to unsolder
Four overlapping Beta Ranges • High meter resolution
Direct reading with test circuit power off

New Sierra 219B 4-range Transistor Tester reads Beta directly in the circuit; also measures I_{CO}, Beta out of circuit.

Less downtime and less danger of damage to transistors under test with this new Sierra instrument—battery-operated, light weight, portable, easy to use.

Maintenance, quality control, incoming inspection and production testing are just a few of the applications where you save time and money by testing transistors, even complete assemblies, without unsoldering leads. Model 219B reads Beta in the circuit, 1 to 120. I_{CO} is measured on a straightforward basis; collector potentials of 3, 6 or 12 vdc may be selected. All controls are on the front panel . . . an instrument of convenience, speed, accuracy.

Write or phone today for information and demonstration.

SPECIFICATIONS

Test ranges	
Beta	1-4, 3-12, 10-40, 30-120*
I_{CO}:	0-50, 0-500 ua
Accuracy	
In circuit:	±20% for external loads over 500 ohms. Improved accuracy above 500 ohms, usable readings below 500 ohms.
Out of circuit:	±10%
Power:	Internal battery, mercury or zinc-carbon type, 600 hrs. av. life; output indicated on front-panel meter.
Operating Temperature:	32 to 149° F
Size:	9" high, 7⅝" wide, 6½" deep, weight, 10¼ lb., including batteries.
Price:	**$275.00**

*Beta readings to 300 may be approximated.

Sierra **SIERRA ELECTRONIC CORPORATION**

A Division of Philco Corporation

6919T BOHANNON DRIVE • DAvenport 6-2060 • MENLO PARK, CALIF., U.S.A.

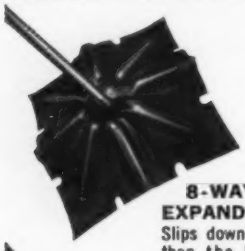
Sales representatives in all principal areas.

Canada: Atlas Instrument Corporation, Ltd., Montreal, Ottawa, Toronto, Vancouver.

Export: Frazar & Hansen, Ltd., San Francisco.

6919

Build lines to stay with
CHANCE ANCHORS
there's one for every need



8-WAY EXPANDING ANCHOR
Slips down a hole no bigger than the base plate. 8 rib reinforced blades expand into solid earth all the way around.

NO-WRENCH SCREW ANCHOR
Pitch-controlled blade goes down fast and adds to holding power. Can be installed by hand.

POWER INSTALLED SCREW ANCHOR
Lets you mechanize screw anchor installation with your power hole-digging equipment. Anchors install in 6 to 8 man minutes.

NEVER-CREEP ANCHOR
Pulls entirely against solid, undisturbed earth. Holds more load than any other type of anchor.

CROSS-PLATE ANCHOR
Install in vertical machine bored holes. Costs much less than "dead-man"--holds more.

ROCK & CONE ANCHORS
Wedge into solid rock and wedge against tamped rock.

CA61-B

A. B. CHANCE CO.
CENTRALIA, MISSOURI
A. B. Chance Company of Canada, Ltd., Toronto

Helpful Literature

VENTILATING HEATERS — Morrison-Pelsue Co. announces new four-page, four-color folders on their Model PE and PE-G ventilating heaters.

Model PE heaters, designed for year-round use under a variety of weather conditions, provide a constant supply of fresh, forced, heated air to ventilate a manhole and prevent accidents to personnel caused by explosion or oxygen deficiencies, the company states. The unit is lightweight, portable and is operated by propane L.P. gas.

Model PE-G ventilating heaters have an attached generator to provide the splicer with electric current while he is working in a manhole. The company states a variety of electrically powered accessories can be operated from either of the 300 or 800-watt-capacity generators available. Request HL689.

•

INDUSTRIAL GLOVES—A full-color, 20-page catalog illustrating the Wil-Gard line of protective gloves and finger cots has been published by the Wilson Rubber Co.

Wilson reports the relative resistance ratings of its glove materials to solutions commonly used in industry. A chart in the catalog offers a check on physical characteristics, such as tensile strength and heat resistance.

Specifications for the approximate minimum thickness, length, weight, and size of each style, as well as its application to various industries and services are listed. Request HL690.

•

FIBRE CONDUIT—Brown Co.'s Bermico Division has also issued an eight-page catalog covering its "Life-Guarded" conduit and fittings.

Titled "Bermico 'Life-Guarded' Electrical Conduit Catalog," this book contains graphic and factual information on the conduit's qualities for both telephone and electrical applications.

Data are included on the conduit's ability to maintain resistance to shock, water, acids, alkalies, corrosion and electrolytic action. Explanations of how the conduit provides protection, termed positive and permanent, for telephone, electrical systems, such as light and power, traffic control, railroad signals and switches, military areas, public works projects, airports, industrial parks and shopping centers, and residential areas are also incorporated in the catalog.

The Bermico line of conduit is described, including Type I, Type II, Phone-Duct and Bermico Parquay (R), angle couplings, adapters, bends, elbows, end bells, reducers, flexible conduit and caps and plugs.

A section on trenching and laying and the use of spacers is also to be found in this reference. Request HL691.

•

GASOLINE-POWERED BORING UNIT—The Ka-Mo G-160—a gasoline-powered boring unit offered by the Kwik-Mix Co.—is the subject of a new bulletin released by Kwik-Mix.

In six-pages and two-colors, the bulletin illustrates and describes the G-160, presents a capacity chart, and discusses in detail many of the machine's various features.

The model G-160's boring range varies from 200 feet of 12-inch diameter

TELEPHONY PUBLISHING CORP.
608 S. Dearborn St.
Chicago 5, Ill.

Please have the manufacturer send me without obligation the literature indicated by the following numbers:

HL689_____; HL690_____; HL691_____; HL692_____.

Name.....

Company.....

Street.....

Town and State.....

9/9/61

hole to 150 feet of 36-inch hole, on the horizontal, or at angles up to 30° from the horizontal.

The G-160 is powered by a four-cylinder air-cooled Wisconsin engine developing 52 hp at 2000 rpm. It has a hydraulic feed and forward and reverse auger speeds of 30, 60, and 90 rpm. Request HL692.

TAKING PBX PEG COUNT

Concluded from page 52

attendant places to extension users advising of a call received, to deliver a message, or to pass information the user has requested.

(b) Count calls an attendant, acting as receptionist, places to extension user, informing him he has a visitor.

(c) Count only those messages which are delivered by telephone.

ITEM 22: (a) On incoming to extension calls, where connector multiple is involved, count each dial pull the operator finds necessary to advance the call to the extension telephone. Should the attendant dial a two-digit extension number she should be credited .16 units; a three-digit number .24 units, and so on.

(b) On outgoing calls, dialed by attendant, count each pull of the dial in excess of four. For each digit less than four subtract this allowance.

ITEM 23: (a) No call shall apply directly to this item.

(b) Count each extension connected to the conference hook-up as an extension to extension call.

(c) Should the conference hook-up involve connection to an outside telephone, count each hook-up as an outgoing—dialed or passed by attendant—call.

(d) Should the conference hook-up involve incoming to extension call, count each connection to an extension as an incoming to extension call.

ITEM 24: Count each time attendant refers to her PBX directory for the extension number of the party or department called.

ITEM 25: Count each time attendant refers to her long distance directory for a telephone number in a distant city.

ITEM 26: Comprehends all subsequent work incident to a paged call, such as relaying to bell captain, giving subsequent and final reports.

ITEM 27 & 28: Machine ringing, visual signals and idle trunk indicating save operating labor and are, therefore, deductible from the base unit involved.

ITEM 29 & 30: Modifiers are applied on the basis of the number of lamp appearances within reach with normal busy hour coverage. These modifiers do not apply to Items 11 and 12.

Cal. Koehring Distributor

Action Equipment Co., West Sacramento, Cal., has been appointed the Sacramento Valley distributor for Koehring, Parsons, and Ko-Cal construction equipment, including Koehring crane-excavators, paving equipment, and off-road hauling units; Parsons wheel and ladder type trenchliners; and Ko-Cal pitloaders and roughloaders.

LOW COST...

RELIABLE
PRECISION
TRANSISTORIZED

Transmission Test Equipment

NEC

A line of portable, lightweight, transistorized test equipment designed and constructed in accordance with the highest standards of quality to meet the present and future needs of the engineer and field man, and developed specifically for the telephone industry.

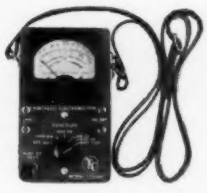
MODEL TTS 4A
TRANSMISSION TEST SET

- Measuring Range: +18 dbm to −50 dbm
- Send Levels: 0 dbm to −40 dbm. Can be supplied with +10 dbm level.
- Send Frequencies: 10 fixed frequencies, including 1300 and 2300 cps, plus continuous tuning from 20 cps to 20 Kc with Model TTS 4XV accessory cover.
- Impedances: 600 and 900 ohms
- Self Calibrating
- Talk and Hold Circuits

MODEL
TTS 15A
TRANSMISSION
TEST SET

- Measuring Range: +8 dbm to −30 dbm
- Send Levels: 0 dbm to −30 dbm
- Send Frequencies: 8 fixed frequencies including 1300 and 2300 cps
- Impedances: 600 and 900 ohms
- Switchable Hold Coil
- Switchable Termination: 900 ohms +2 mf
- Simultaneous Send and Receive

MODEL
TTS 18A
LEVEL and DC
CURRENT
METER



- Level Ranges: 0 dbm to −20 dbm and −10 dbm to −30 dbm
- DC Current Range: 0 to 100 ma
- Dial Through Provisions
- Battery Check
- Wide Frequency Response

Other instruments available from Northeast Electronics Corporation include Single Frequency and Multi-Frequency Reference Tone Generators, Loop Around Transmission Test Systems, Fault Locator, Singing Point Test Set, Program Amplifiers, and RF Power Monitors.

IN CANADA: TELE-RADIO SYSTEMS LIMITED/3633 Dundas St. W., Toronto 9, Ontario/RO. 2-8224 Area Code 416

WRITE FOR COMPLETE CATALOG

NORTHEAST ELECTRONICS CORPORATION
AIRPORT ROAD, CONCORD, NEW HAMPSHIRE

Safety's Still First

By ROY SAVAGE

Roy Savage, director of supply sales, Automatic Electric Sales Corporation.

At numerous times throughout the year, the National Safety Council increases its efforts to make each of us more aware of the importance of safety. Highway safety is usually given the greatest emphasis, but safety at home and on the job are stressed also. Do these campaigns really make us more aware? And if they do, does increased awareness cut down on accidents? Both are moot questions currently under discussion by psychologists and safety experts.

The safety people say that while the total number of accidents continues to climb, the accident rate has been reduced. The psychologists dispute this statistical explanation and offer one of their own. Many people, they say, are incapable of facing unpleasant possibilities, and will tune their minds out when presented with the subject of accidents, possible disfiguration or death.

To support their view, the psychologists point to the experience of one of our leading automobile manufacturers. A few years back, this company decided to promote that season's line of cars as the safest autos people could drive. They began an advertising campaign which promoted seat belts and safety glass as standard equipment. Their sales dropped drastically, and they quickly switched their advertising approach. The psychologists explain that for many people, the company's cars had become symbols of an unpleasant possibility.

INDUSTRY'S RECORD GOOD

But what of the very good record that industry has made in this area? The businessman does not run from this problem. He accepts the challenge and acts to solve it. He uses the suggestions of the NSC concerning safe practices and safety devices. He wages a constant struggle against accidents and carelessness on the job. He inspires the same attitude in his men. The result is a greatly improved safety record.

The same businessman who may refuse to listen to warnings that affect him or his family personally, may very well heed the same warnings when they affect his company or his employees. This, according to the psychologists, is a difference between personal and business or social consequences. The businessman can see the merits of safety campaigns objectively, and he acts unemotionally to provide safety for his people and his plant.

Another factor in the businessman's favor is his desire to do the job the right way. If his employees share this desire, their safety record is bound to improve, because the correct way is always the safe way.

We don't know who has the right answer. Both views have some merit and the truth probably lies in a combination of the two schools of thought. Although the psychological answer may be correct, we feel that constant safety reminders must have some positive affect on people willing to heed them, and safety campaigns and slogans should be encouraged.

One thing we do know. Business has made the best safety record, and utility companies, especially telephone companies, have been leaders in the effort. This is due, not only to the awareness of the telephone man, but his use of safe practices and safety devices. Still more encouraging are the many new products being developed to improve safety standards still further.

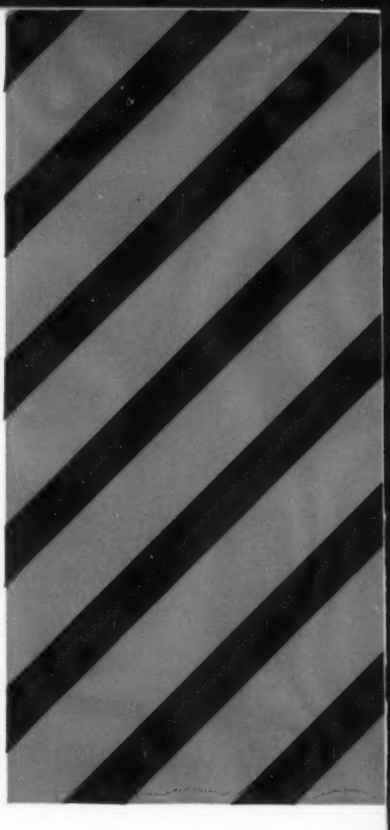
IMPROVED DEVICES

The latest safety ladder for power and telephone companies is made of wood and covered with a thick coating of fibre glass. These two materials combine high resistance to electrical charges, durability and long life.

Highway and roadside construction is an area that is mushrooming with improved safety products. The guiding of traffic around men at work is made more feasible by the use of flashing lights, flags, traffic cones and flares. These warning signals give the motorist ample time to adjust to the unusual road condition. Used properly, these devices can move traffic smoothly and safely with a minimum of inconvenience to motorists and work crews.

Proper placement of these devices is essential to their success. For this reason we recommend two NSC pamphlets* on the subject. These pamphlets show how safety can make all our jobs better jobs. They should be of great interest to anyone who wants to improve the safety standards of his company and his community.

*Copies available by writing Mr. Savage at Automatic Electric Sales Corp., Northlake, Illinois



COLORFUL TRAFFIC CONES for better traffic control. Help guide flow of traffic smoothly. Protect motorists and work crews. Vivid yellow and red colors.

warehouses:

Northlake Illinois Fillmore 5-7111

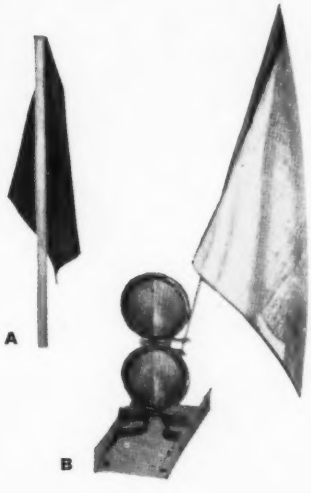
2915 Moore St. Richmond 21, Va. ELgin 8-9280

PROTECT YOUR MEN AGAINST ACCIDENTS

AE has everything you need for safety first

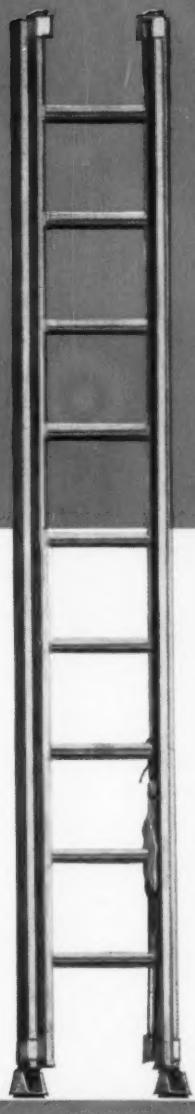
Here are just a few of the improved safety devices that keep your men safe while they work. There are others, of course... in stock... in our warehouses. All are designed for maximum protection. When safety counts, contact your AE representative.

FLASHING LIGHTS for use with barricades, vehicles. Light is detachable for use with tripod for heights up to 8 feet. Compact, lightweight unit flashes clear red beam. Batteries last up to 300 hours.



A. **DANGER FLAGS.** AE stocks a complete line of danger flags, including the new reflector-type nylon flag. Any flag for any use—self-standing, pole-mounting or on barricades and vehicles. AE's got 'em all.

B. **VARI-FLARE REFLECTORS** with Stimsonite lenses. Reflect 24-candle power over ½ mile in two directions. Four times brighter than average tail light. Flags are for daytime use. Base is stable even in high winds.



FIBER GLASS SAFETY LADDERS. Sturdy, long-lasting fiber glass coating over non-conductive wood for top safety. Bright yellow color is easy to see at a distance. Safety shoes guard against slipping.

AUTOMATIC ELECTRIC

Subsidiary of

GENERAL TELEPHONE & ELECTRONICS

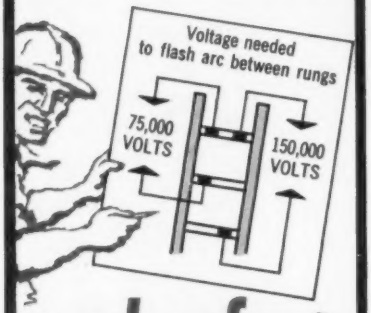
GENERAL SYSTEM

2360 N. W. Quimby St.
Portland 10, Ore.
CApital 3-7244

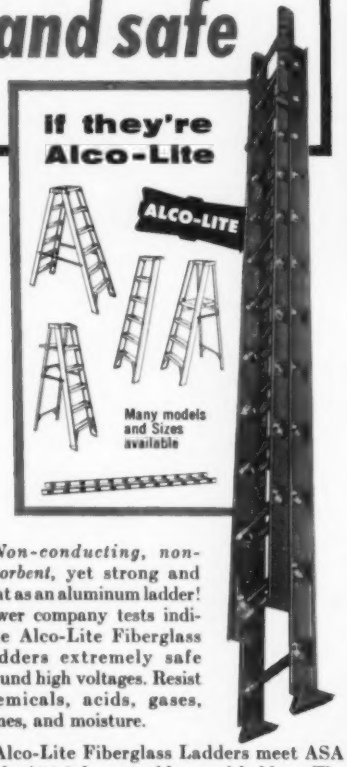
158 Corliss Avenue
Johnson City, N. Y.
RA 9-4996

2021 Main St.
Kansas City 8, Mo.
HArrison 1-7575

fiberglass ladders are strong



and safe



Non-conducting, non-absorbent, yet strong and light as an aluminum ladder! Power company tests indicate Alco-Lite Fiberglass Ladders extremely safe around high voltages. Resist chemicals, acids, gases, fumes, and moisture.

Alco-Lite Fiberglass Ladders meet ASA Code A14.2 for portable *metal* ladders. The wider side rails are SOLID fiberglass—not plastic covered soft wood. The wide steps and rungs are high tensile strength aluminum. More riveting and bracing throughout!

Ladders safe, strong, more rigid, have longer life, because of exclusive design and construction. Maintenance negligible. *SEND FOR CATALOG!*

Original Manufacturer of ALUMINUM Ladders

Aluminum Ladder Co.

West Darlington Street Ext.

FLORENCE 8 S. CAROLINA

L. M. Berry & Co. Announces Seven Management Changes

Extensive management changes were announced recently by L. M. Berry & Co. as seven executives assumed new positions.

J. P. WHITE

J. P. White was named southern area manager, with headquarters in Louisville, Ky.; R. A. Maner was appointed Florida area manager, with headquarters in Tampa; B. D. Addington became special representative for the eastern territory, with headquarters in Bristol, Tenn.; and W. J. McGirl was made southern manager, with headquarters in Louisville.

R. A. MANER

B. D. ADDINGTON

Also, C. A. Smith was appointed Florida division manager, with headquarters in Tampa; J. D. Beckham was named mid-eastern division manager, headquartered in Bristol; and R. F. Watts was appointed Tennessee division manager, with headquarters in Nashville.

W. J. McGIRL

C. A. SMITH

Mr. White joined L. M. Berry and Co. in 1920, in Louisville. For the next several years, he carried out sales and supervisory assignments in the eastern, central, and southern sections of the country. In 1942, he was appointed southern manager, and served in that capacity until his recent appointment.

Mr. Maner joined the company in 1931, in Tampa, as a salesman and traveled throughout the firm's operations in sales and supervisory capacities. In 1941, he was appointed Florida district manager, and was named Florida division manager in 1947. He held this post until receiving his new assignment.

Mr. McGirl was employed as a salesman in 1947, in Birmingham, Ala., and progressed through various supervisory assignments until 1951, when he was named Alabama division manager. After serving subsequently as manager of the Ohio and Louisiana divisions, he was appointed southern sales manager in 1954, and remained in that position until his appointment as southern manager.

J. D. BECKHAM

R. F. WATTS

Mr. Smith began his association with the company in 1947, as an Alabama division salesman. He later carried out supervisory assignments in the Florida

REPAIR AND COLOR

BRIGHT NEW COLORS BUILD NEW BUSINESS

DIALS—repaired or modernized **fast** with satisfaction guaranteed by exclusive, Hallamore designed electronic test apparatus.

TELEPHONE INSTRUMENTS AND PAY STATIONS—given the **new look** (changed from black or faded color to your choice of user-attracting shades by the magic of tough, durable Hallaplast) while they are brought to peak efficiency.

—Hallamore, Division of The Siegler Corporation/ 714 N. Brookhurst St./Anaheim, Calif./ PRospect 4-1010/D.D.D. area 714.

HALLAMORE

division, remaining there until 1956, when he was appointed Louisiana division supervisor. Subsequently, he held the posts of division sales supervisor and division sales manager in Louisiana before his appointment as Alabama division manager in 1957. In 1958, he was appointed Tennessee division manager, and served in that capacity until his recent assignment.

Mr. Beckham joined the company in 1949, as Tennessee office manager, and became Tennessee division assistant in 1953. In 1953, he was named Mississippi division manager, and became Tennessee division manager in 1958. He was appointed southern personnel manager in 1958 and held that position until his new appointment.

Mr. Watts joined L. M. Berry in 1949, as a Kentucky division salesman. He was appointed directory supervisor in 1955, and in 1959, became the Kentucky division sales manager. He was named general sales assistant in 1959 and held that position in the general office until receiving his new assignment.

According to managing director John W. Berry, the management shifts resulted from expanded service requirements of the company, which now operates in 32 states and Canada.

Electronic Toll Statement Plan Announced

An Electronic Toll Statement Plan, under which telephone companies using mark-sense toll tickets can have their toll statements prepared by data processing has been announced by May & Speh Tabulating Service, 4020 W. Division St., Chicago 50, Ill.

The May & Speh plan, which it says offers fast and accurate results at a cost usually less than the slow and error-prone manual method of preparing toll statements, works as follows:

Telephone companies feed marked-sensed cards or manual toll tickets, or a combination of both to May & Speh. This is usually done once a month at the billing cut-off date. May & Speh prepares punched cards for the manual tickets and electronically sort and merge these by telephone number with the marked-sensed cards. They then prepare printed toll statements for each subscriber, showing the following information:

Date of call.
Type of call—DDD, collect, credit card, telegram, etc.
Number called.
City and state called.
Amount federal tax.
Total amount.
State tax if any is assessed.

In addition, May & Speh prepares a

Control brush this winter, spread your budget and workload with Amchem's new

DORMANT CANE BROADCAST SPRAYING *with* TRINOXOL AND DINOXOL

THE TECHNIQUE

In dormant cane-broadcast treatment, spray stems so that good run-down to the root collar zone occurs. The spray is then broadcast to wet all aerial portions of the dormant cane.

THE RESULTS

This technique has proved successful in eliminating "brown out" on brush along roadsides, gives better control of hard-to-kill oaks and maples. By first spraying at the base of the stems, sprouting after the second growing season after treatment is greatly reduced.

THE ADVANTAGES

Dormant Cane Broadcast Spraying is Amchem's answer to a long needed utility brush control program that provides effective results, economical chemical usage and an all-around winter spraying season!

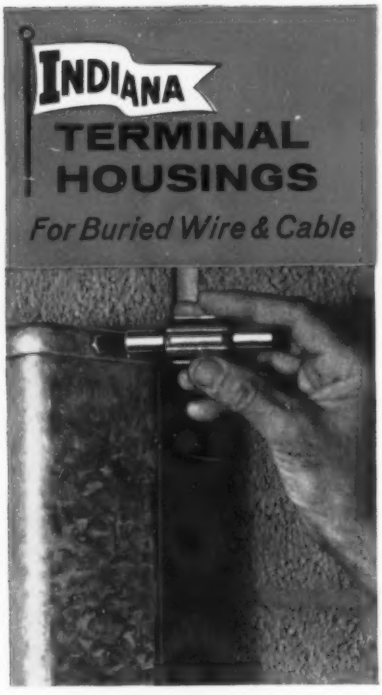
"Broadcast" treatment can be done any time from leaf drop to bud break, extends the spraying season to 8 to 10 months of the year! No minimum temperature is required to treat, and winter spraying does not damage susceptible crops. These advantages mean even more to you—like stretching your budget further, spreading out contractor's (or your own) workload and labor force. Cost? Easily comparable to waterborne stem foliage spray!

Remember the name—**DORMANT CANE BROADCAST SPRAYING.** Get the details!

AMCHEM

AMCHEM PRODUCTS, INC.

Amchem is a registered trademark of
AMCHEM PRODUCTS, INC. (Formerly American Chemical Paint Co.)
AMBLER, PA. • St. Joseph, Mo. • Niles, Calif.



ENGINEERED TO SAVE YOU TIME AND LABOR

ONE screw like this is all that's required to complete the assembly of INDIANA Pedestal-Type Terminal Housings. This is typical of the time and labor-saving features to be found in these carefully engineered housings for buried wire and cable.

Made of heavy gauge steel and galvanized AFTER forming, INDIANA Terminal Housings provide long-lasting protection to terminal blocks, loading coils and/or splicer. Both pedestal and pole-mounted types, designed to accommodate from one to 400 pairs, are available.

Ask your distributor about these dependable, economical housings, or write for Bulletin No. TH-101R.

INDIANA
Steel & Wire Company, Inc.
Muncie, Indiana

Toll Journal by exchange, showing by date and billing number each call made, the total number of calls by exchange, total tax and total amount of toll by exchange.

The toll tickets, which are in order by billing number by date, together with the toll statements and registers, are then sent back to the telephone company. The entire time span is usually three to four days from the time the company sends the tolls to May & Speh until they receive the finished toll statements back, ready for mailing.

IN THE NATION'S CAPITAL

Continued from page 21

The expanded services, the increase of population, the usefulness of the telephone, and improved business conditions are all favorable factors for a continued upward movement of the telephone industry. The number of telephones, local and toll calls, and revenue will all reach new highs in 1961. The total telephone plant investment at the end of 1960 was almost 29 billion dollars, and should be greater at the end of 1961 because of the continued expansion program, BDSA states.

Equipment Picture Also Rosy

Accompanying the foregoing report was a similar report of prognostications for the communication equipment manufacturing industry by BDSA.

Domestic and foreign sales of communications equipment increased about 5 per cent during the first half of 1961 over the corresponding period of 1960. "The industry expects a substantial upward trend in sales for the remainder of 1961, which should result in another all-time annual high," the Communications Industries Division study reported.

More than one-quarter million different pieces of equipment and parts are manufactured by the communications equipment industry, including a wide variety of highly complex switching and transmission items, usually custom built for operating domestic telephone, telegraph, and international radio and cable companies.

During 1960, the industry paid its 188,000 employes more than 1 billion dollars and employment is expected to increase slightly in 1961.

Shipments of communications equipment increased substantially in the first half of 1961, although a slight decrease was anticipated last fall. During the first half of 1961, domestic and foreign sales were approximately 5 per cent ahead of the first half of 1960. Since the 1958 recession, communications equipment sales have constantly in-

DON'T LET THESE ENEMIES RUIN YOUR POLES

Osmose TRI-WAY
Ant & Termite Treatment
STOPS 'EM DEAD

Ants and termites are playing a more prominent part in wood pole destruction in areas where they were never before considered to be an important factor. But here's good news . . . the assurance that ants or termites can be eliminated from standing poles wherever infestation occurs.

The Osmose Research Division has developed a new, powerful injection solution which acts positively and effectively through three components: (1) An insecticide known for its permanent effect; (2) An insecticide capable of generating active toxic vapors which will reach areas not directly contacted by the solution; and (3) A wood preservative which is included to stop decay in those areas reached by the solution itself.

Guard against this potent danger to pole life and safety. Osmose field crews are prepared to apply TRI-WAY Ant and Termite treatment as a part of their regular groundline inspection and treatment service wherever needed. Here is the most thorough . . . the most dependable groundline service you can obtain. Get protection, safety and long-lasting economy the proven OSMOSE way. Write Osmose Wood Preserving Co. of America, Inc., 976 Ellicott St., Buffalo 9, N. Y.

OSMOSE
SERVING UTILITIES SINCE 1935

creased, according to BDSA quarterly surveys, as follows:

1958	$2.48 billion
1959	2.65 billion
1960	2.93 billion
1961 (est.)	3.20 billion

Approximately 30 per cent of the total sales were to the government, mainly for national defense projects.

Telephone sets and central office switching equipment are the common production indicators for the industry. The principal items of communications equipment and components produced in 1960 are as follows:

Product	*Unit of Measure*	*1960*
Telephone sets	Sets	9,102,400
Dial central office equipment	Lines	4,162,217
Dial PBX equipment	Lines	777,981
Manual central office equipment	Positions	3,782
Manual PBX equipment	Positions	8,625
Ringing machines	Units	31,557
Repeater equipment (voice and telegraph)	Repeaters	329,365
Intercommunications equipment	Stations	24,203
Telegraph station equipment	Instruments	70,926
Carrier equipment	Channels	70,766
Cable terminals	Units	974,300
Telephone booths, metal	Units	16,198

With the U.S. economy gaining momentum, annual sales are expected to be greater than anticipated six months ago and should reach about 3.2 billion dollars, another peak year for the industry. Export sales should also increase correspondingly, according to BDSA.

Voss President of New GD Telecommunication Division

General Dynamics Corp. on Aug. 29 announced the formation of a new division, General Dynamics/Telecommunication.

The new division, headquartered in Rochester, N. Y., produces the Stromberg-Carlson line of telephone equipment for the Independent telephone industry. It was formerly a part of General Dynamics/Electronics. In view of the growing importance of the corporation's telephone business, Frank Pace Jr., chairman of the corporation, said this division now merits independent status.

John H. Voss, vice president and general manager of the telecommunication operation for eight years, has been appointed president of the new division and a senior vice president of General Dynamics Corp.

In a related move, the corporation

BUILT-IN BALANCE

WITH ALPHADUCT REINFORCED DROP WIRE

Balanced breaking strength of the conductors—400 pounds plus, with #18 AWG, 30% copperweld. Adhesion of the insulation—strong enough to prevent slipping at maximum load without physical or electrical failure. Neoprene jacket—tough, abrasion and weather resistant with enough "beef" to prevent buckling at the "P" clamps all the way up to maximum conductor strength. Compression cutting resistance—no break-down in "P" clamps up to overall breaking strength of the conductors. This sturdy balanced construction resists deformation and provides greater protection against lightning failures. This combination of exclusive Alphaduct features assures you of built-in balance for more years of trouble-free service and lower initial installation costs.*

National Distributors: Automatic Electric Sales Corporation, Northlake, Illinois; Leich Sales Corporation, 427 W. Randolph Street, Chicago, Illinois.

ALPHADUCT
WIRE AND CABLE CO.
NEW BRUNSWICK, N. J.

Regional Distributors: Buckeye Telephone & Supply Co., Columbus Ohio; The Lindsay Telephone Supply Co., Cleveland, Ohio; Pankey Supply Co., Charlottesville Va.

*It's dated for comparison.

BEAUTIFUL AWARDS
FOR
SPECIAL RECOGNITION

SERVICE • SAFETY • SALES PROMOTION

Finely constructed of precious metals and stones.

Art and quotations submitted without cost or obligation.

WALT BARBER Advertising Specialties
AREA CODE 404 CEdar 3-5478
BOX 11927 • ATLANTA 5, GEORGIA

How to CONTROL and ALARM the TOWER LIGHTS of UNATTENDED Microwave and Communication Stations

PHOTO ELECTRIC PANEL
Automatically turns Tower Lights ON and OFF in accordance with FCC regulations
FLASHER PANEL - Automatically Flashes Beacon Lamps — with balanced load provisions.
ALARM PANEL - Automatically provides signals indicating failure of any lamp, power or control.

Model LC 201
TOWER LIGHTING CONTROL UNIT
(for Two Light Levels)
Model LC 101 (for Single Light Level)
Model LC 301 (for Three Light Levels)
Models also available with separate Alarm Signal for each Beacon Lamp.

USITA Convention Rm. 639A

HUGHEY & PHILLIPS, INC.
Manufacturers of
300 MM Beacons, Obstruction Lights, Photo-Electric Controls, Beacon Flashers, Special Junction Boxes, Microwave Tower Light Control & Alarm Systems, Tower Isolation Transformers, and Complete Kits for: Tower Lighting, Sleet-melter Power & Control.
3200 NORTH SAN FERNANDO BLVD.
BURBANK, CALIF.

J. H. VOSS

announced the unification of the remaining operations of General Dynamics/Electronics with those of General Dynamics/Pomona.

General Dynamics/Electronics, which has operations in both Rochester and San Diego, Cal., produces electronic equipment for defense, industry, and the home. General Dynamics/Pomona produces the advanced Terrier, Tartar, Redeye, and Mauler missile systems, and advanced defense electronic systems.

The combined operation will be headed by Charles F. Horne as president. Mr. Horne is president of General Dynamics/Pomona and a senior vice president of General Dynamics, and has been with the corporation for many years.

Mr. Horne has had a long association with the electronic and communication industry dating back to his graduation from the U. S. Naval Academy in 1926. He states that he does not plan any transfer of operations away from Rochester.

"This most recent move" said Mr. Pace, "is a continuation of the consolidation of the electronic activities begun earlier this year. By combining the direction and competence of these two electronic-oriented divisions, we feel we can strengthen our position in a fast-moving industry both in end product and in support operations to weapons systems and to provide more rapid development and greater flexibility."

Mr. Pace emphasized that existing operations will be continued at their current geographic locations.

Mr. Voss has been with Stromberg-Carlson since 1946 in various engineering capacities, becoming vice president and general manager of the Telecommunication Division of Stromberg-Carlson before its merger with General Dynamics Corp. He remained as vice president and general manager of the Telecommunication Division of General Dynamics/Electronics.

Born in Manila, the Philippine Islands, Mr. Voss is a 1920 graduate of the Bliss Institute of Technology, Washington, D. C., where he majored in electrical engineering.

C. F. HORNE

He joined Stromberg-Carlson as head of the circuit development and testing laboratory for XY dial and relay dial systems. Two years later he was appointed section head of dial systems engineering, and in 1949 he became chief engineer of the telephone division. He continued in that capacity until being advanced to the post of vice president and general manager of the Telecommunication Division in 1954.

Prior to joining Stromberg-Carlson, Mr. Voss was associated with the Automatic Electric Co., Chicago, Ill., where he served as a test engineer from 1920 to 1928, project design engineer from 1928 to 1936, and senior project engineer in research and development from 1936 to 1946.

Mr. Voss is a registered Professional Engineer in the state of Illinois. He holds 62 patents in the field of telephone equipment.

He is a member of the Telephone Pioneers of America, American Management Association, and the Armed Forces Communications & Electronics Association. He is a director of The Stromberg-Carlson Credit Corp.

Names Mitchell As Director

Don G. Mitchell, vice chairman of General Telephone & Electronics Corp., and chairman of its Sylvania Electric Products, Inc. subsidiary, has been elected a director of Times-Mirror Co., Los Angeles newspaper and book publishing company.

POLES • CROSSARMS
RAIL or TRUCK DELIVERY
Pressure-treated to your specifications. 16 sales offices, 34 plants serving you. See Yellow Pages, write or call Pittsburgh EXpress 1-3300.
C-10
KOPPERS COMPANY, INC.
Wood Preserving Division
757 Koppers Bldg., Pittsburgh 19, Pa.

CREO & PENTA TREATED **POLES**
"from the Nation's Largest Plant"
DIERKS FORESTS, INC.
NA 3-7766 Hot Springs, Ark.

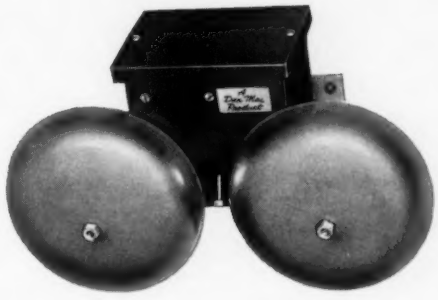
Need help? Need a job? Something to sell? Something to buy? For best results and quick results use
TELEPHONY's
Classified Advertising Section

DAN MAC DELUXE
WEATHERPROOF LOUD RINGING EXTENSION BELLS

With Aluminum 6-Inch Gongs and Non-Magnetic Aluminum Cases with Outside Mounting Brackets Available in Straight Line and All Frequency Ringing. High Impedance or Low Impedance.

Special Resistance on Request.

Distributed by jobbers of telephone equipment.



TELEPHONE REPAIR & SUPPLY COMPANY
1760 WEST LUNT AVE., CHICAGO 26, ILL. • TELEPHONE ROGERS PARK 4-3817-8

POLES

B. J. Carney & Co., 100 N. 7th St., Minneapolis, Minn.—Western red cedar poles. Pentrex Butt Treated or Plain.

Cascade Pole Co., P.O. Box 743, Tacoma, Wash. — Creosoted Douglas Fir and Cedar Poles.

C. M. Christiansen Co. — Northern White Cedar Poles, Pentachlorophenol treated. Plant and Yards, Phelps, Wis.

Eppinger & Russell Co., 80—8th Avenue, New York 11, N. Y.—Creosoted Poles and Cross Arms. Plants: Jacksonville, Fla., Norfolk, Va., Eddington, Pa.

International Creosoting and Construction Co., Galveston, Texas—Creosoted Southern Yellow Pine Poles. Plants Beaumont and Texarkana, Texas.

International Paper Co., Wood Preserving Division — 926 Grand Avenue, Kansas City, Missouri—"LONG-BELL" pressure-treated Southern Pine and Douglas Fir Poles—Creosote or Penta.

Piedmont Wood Preserving Company —Creosoted and Creosote-Penta Treated Pine Poles. Plant, Augusta, Georgia. Yards, Virginia, West Virginia and Connecticut. Address inquiries to Box 1662, Spartanburg, S. C.

Texas Creosoting Company—512 Main Street, Orange, Texas—Creosoted Southern Yellow Pine and Douglas Fir Poles. Can also treat with "Penta."

CABLE SPLICERS • LINEMEN
STATION INSTALLERS
STEADY WORK, GOOD PAY
MIDWEST LOCATION
The Weikel Line Company, Inc.
FORT WAYNE, IND.

CABANISS-POGUE COMPANY
Consulting Engineers
Appraisals—Cost and Rate Studies
Financial Assistance
GRANT BLDG., ATLANTA, GEORGIA

CARL C. CRANE, INC.
Consulting Engineers
121 S. Pinckney St. Madison 1, Wis.
Telephone ALpine 6-0247

SLOAN, COOK & LOWE
CONSULTING ENGINEERS
Appraisals—Original Cost Studies
Toll Separations—Plant, Traffic and Commercial Engineering
176 West Adams St.
Chicago 3, Ill. Tel.: FRanklin 2-5924

Professional Engineers - Contractors
Central Office Installation
Cable Splicers, Plant Crews, Installer Repairmen
HENKELS & McCOY
PHILADELPHIA
1800 N. Johnson St., Elkhart, Ind., Tel. CO 4-1121

Electric Power and Communications Construction
E. & C. CONTRACTING CO.
Box 191
Paoli, Indiana
Phone 7821

TUDOR AND YAGER, INC.
Telephone Construction
TIPTON, INDIANA
Phone OSborne 5-2267

Need help? Need a job? Something to sell? Something to buy? For best results and quick results use

TELEPHONY's
Classified Advertising Section

CLASSIFIED SECTION

Rates 15 cents per word payable in advance. Minimum charge $3.00 for 20 words or less.
Classified advertisements must reach us 8 days before publication date.

POSITION WANTED

MANAGER: Experienced REA & Independent. Desires to relocate out of prime target area. Detailed résumé available now. Write Box No. 4575, c/o TELEPHONY.

MANAGER OR PLANT SUPERINTENDENT for Independent or Co-op, in North West U. S., experience, 14 years with Bell Co., including Microwave, carrier, step by step, all relay, and plant office work. Write Box No. 4574, c/o TELEPHONY.

BELL SYSTEM DIVISION CONSTRUCTION SUPERINTENDENT experienced in construction, rearranging, maintaining, repairing and contracting work. Interested in permanent position, or consultant. Write Box No. 4576, c/o TELEPHONY.

HELP WANTED

ENGINEERS—TELECOMMUNICATIONS SYSTEMS
Transmission; Propagation; Field Surveys, Applications Research, VHF, UHF, MICROWAVE, SCATTER. Write: Employment Manager, Microwave Services, Inc., General Offices, U.S. Rt. 46 & Cisco Rd., Denville, N.J.

ACCOUNTANT qualified to assume full responsibility as Accountant and Commercial Manager for Class A company operating in Florida and Georgia. Please give full résumé and salary expected in first letter. Write to Box No. 4555 c/o TELEPHONY.

HELP WANTED

ACCOUNTANT, experienced in FCC and REA requirements, for Class A telephone company located in Southeast. Send complete résumé to Box. No. 4571, c/o TELEPHONY.

AMBITIOUS MEN qualified as Station Installers, Equipment Installers, Cable Splicers, Linemen. Work in Midwest. Harris-McBurney Company, Inc., P.O. Box 267, Jackson, Mich.

OFFICE SALESMAN—Growing midwest manufacturing company serving the telephone industry needs capable man to handle sales correspondence and customer relations with opportunity to become assistant sales manager. Some traveling. Our employees know of this ad. Write Box No. 4577 c/o TELEPHONY.

WANTED TO BUY

TELEPHONES—all types—any condition, candlesticks, wall sets, etc. Write advising quantities available. Our trucks will pick up. Reply to Box No. 3952, c/o TELEPHONY.

WANTED ALL MAKES OLD TELEPHONES—our truck will pick up and pay you Cash on the spot. Telephone Co., Turtle Lake, Wis.

FOR SALE

JUST REMOVED ACCOUNT DIAL CONVERSION — Western Electric magneto handsets Type 202 — $3.00; Magneto generator boxes—$1.00, Leich 901 handsets—$10.00. Write to Box 296, Rison, Ark.

FOR SALE

AT LAST SOME VERY GOOD MAGNETO SWITCHBOARDS at low prices also modern rack and sub-cycles. Write Telephone Co., Turtle Lake, Wis.

IBM MODEL B ELECTRIC TOLL BILLING TYPEWRITER good condition, $100. Write J. K. Davis, 529 Birch St., Trussville, Ala., Telephone 655-3122.

LIKE NEW 901—Wall or desk Magneto telephones with Koiled Kords and connecting blocks. Write Telephone Co., Turtle Lake, Wis.

DIAL TELEPHONE PLANT; 173 telephones for sale—Kellogg Telephone & board. Write Middle River Telephone Co., Inc., Middle River, Minn.

HOUSTON COUNTY TELEPHONE COMPANY, Erin, Tennessee. Write H. L. Austin, P. O. Box 229, Erin, Tenn., or phone ATlas 9-3211 or resident phone No. ATlas 9-2801.

1 AMP. POWER PACK KITS. 110V-AC/60V-DC. 1.5 AMP. Intermittent operation. Connect in parallel for higher current requirements. Regulated voltages 1 to 60 available with powerstat. $50.00 value . . . price $20.00. Write Electrical Supervising Company, 329 South Wood St., Chicago, Ill.

RDW BRACKETS — REFINISHED
J-8236 Pole Brackets..... .60 ea.
J-8235 Arm Brackets.....1.00 ea.
Prepaid in lots of 50 or more.
6 INCH THIMBLE EYE SCREW ANCHORS
¾ in. x 5½ ft.....3.00 ea.
Prepaid in lots of 24 or more.
Telephone Equipment, Inc.
Montrose, Mich.

BRAND NEW COOK XB POLE TERMINALS, 16 pair — unprotected, w/stubs—$6.00 Ea. A.E. #80—DESK SETS, dial, St. line, coiled cords. $16.00 Ea. Limited supply—F.O.B. Chicago. INDEPENDENT TELEPHONE REPAIR CO. 2137 West 21st St., Chicago 8, Ill.

The following NEW DROP WIRE in odd-size coils of 300-ft. to 950 ft. unless otherwise indicated:
#18-2 Neop. Jacketed Dumbell Parallel Copperweld—
118,545 ft.—$20.50 M ft.
#18-2 Neop. Jacketed Regular Parallel Copperweld—
104-875 ft.—$21.75 M ft.
#17/2 Neop. Jacketed Twisted Pair Copperweld—
82,780 ft.*—$25.05 M ft.
*76,000 ft. boxed in 1,000-ft. coils
All wire guaranteed. All coils factory wrapped in waterproof paper with ripcord. Above quantities offered subject to prior sales. FOB Charlottesville, Va. Pankey Supply Co., Box 1070, Charlottesville, Va. Telephone #3-2115.

NEW
WESTERN ELECTRIC EQUIPMENT

500 W.E. #HA-2 Receivers
500 W.E. #U-1 Receivers
200 W.E. #11-A Headbands w/Pads
800 W.E. #G1-A3 Headset Handles only less caps
1000 W.E. #101-A Induction Coils
100 W.E. #52 Type Operators Sets with Plugs
2000 W.E. #12B Lamp Sockets on #137-B Mtg. (20 per)

BUCKEYE TELEPHONE & SUPPLY CO.
1250 KINNEAR RD. COLUMBUS 21, OHIO
488-0655 (Area Code 614)

FOR SALE

FOR SALE: Stromberg-Carlson PBX #121 cordless. Equipped 16 lines, 5 trunks. Like new condition. Used less than one year. Will discount 30%. Write or call Manager, Midstate Telephone Company, Kimball, S. Dak.

NEW F40 STROMBERG-CARLSON PABX. Line circuits equipped 40, wired 20. Trunk circuits equipped 8, wired 5. 2 information trunks, executive right-of-way. Night answering, conference calls, and code calls.—$3,500.00. Write Central Telephone Co., Inc., Decatur, Texas, MA 7-2111.

FOR SALE: Six positions of No. 3 Stromberg-Carlson Toll Switchboard. For information, write or call Knox Hagar, California Water & Telephone Co., 115 East Lime Avenue, Monrovia, California, telephone EL 9-8151, Extension 821.

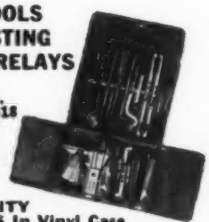
SAVE $1.00 per foot, 10,000 feet of new aerial and duct 202 pair #19 PVC & PVC; REA-PE14. 1000 foot reels. $1000.00 per reel, FOB Green Bay. Like new, #18 Copperweld, Cotton Reinforced, parallel, Drop Wire $11.95 M/Ft. FOB Green Bay. You save at least $15.00 M/Ft. We refund money and freight if not 100% satisfied. Write Miller Wire & Cable Co., 105 N. Pearl St., Green Bay, Wis., Phone HEmlock 7-5113.

USED, SERVICE REPRESENTATIVE TUB FILES AND DESKS. One tub file and two desks per unit, 45 units available; good condition, reasonably priced.

RAMSEY BUSINESS EQUIPMENT, INC.
Box #1354 GA 1-3738 Cincinnati, Ohio

COMPRESSOR ELECTRIC STARTER
Throw the Rope Away!
Buy a Da Valle Starter for
Your 3 R-36 Spot Air Compressor
WELDING SERVICE CO.
85 Tully Road, San Jose, Calif.

Clear rigid plastic covers for two bank connector and selectors.
For samples and prices write:
WILSON PLASTICS, INC.
Box 8248 — S. Charleston, W. Va.

KIT OF TOOLS FOR ADJUSTING All Types OF RELAYS
No. TK-18
$34.00

18 HIGH QUALITY NEUSES TOOLS In Vinyl Case
Everything you need — Thickness Gauges; Spring Tension Gauge; Contact Burnisher; "Relay designed" Wrenches.
Write for catalog.
P. K. NEUSES, INC.
511-19 N. Dwyer St., Arlington Heights, Ill.

DIALS
Dial Haven Reconditioning Service provides expert workmanship plus genuine and improved parts to insure long life for your telephone dials.
DIAL HAVEN INC.
P.O. Box 655 Monroe, N. Y.
Code 914 783-2221

Tel-Tronics Incorporated
TELEPHONE Construction and Maintenance SUPPLIES. C.O.E. Engineering and INSTALLATION CREWS. Factory Trained SPECIALIST.
MONTGOMERY WAREHOUSE
ALL WORK GUARANTEED
ANY TYPE SYSTEM
1953 Mobile Road, Montgomery, Alabama
Telephone 262-8098

EVERY MONTH
More and More Telephone Companies use DIRECTORIES produced by
Your Inquiry Respectfully Solicited
LELAND MAST DIRECTORY COMPANY
1519 GREENWOOD WILMETTE, ILL.

CALL — WRITE — WIRE
"AMERICA'S FOREMOST CABLEMEN"
Aerial and Underground Engineering and Construction Service For Telephone Companies
LARGE OR SMALL
U. S. CABLE CONSTRUCTORS, INC.
2002 E. Wisconsin Ave. P.O. Box 378
REgent 4-9881
APPLETON, WISCONSIN

CABLE SPLICING
LINE CONSTRUCTION
CABLE PRESSURIZATION SYSTEMS ENGINEERED AND INSTALLED
UTILITIES CONTRACTING CO.
211 Custer St., Lansing, Michigan
Phone—IVanhoe 25248

CABLE CONSTRUCTION CO.
1512 Center St. Tacoma, Washington
ENGINEERING - CONSTRUCTION
SPLICING - CABLE PLOWING
CENTRAL OFFICE INSTALLATION
World-Wide

CABLE SPECIALS...all new...guaranteed perfect

SUBMARINE CABLE (also ideal for direct burial)
26 pair #19 ga. paper insulated lead covered—two layers steel wire armor, & jute 800 & 500 foot reels (one length per reel) F.O.B. L.A. or Fresno, Calif.
Western Electric ..... 14000 ft. available—50¢ ft.
DIRECT BURIAL 26 pair #22 Ga, paper insulated lead covered, two layers steel tape armor, jute protected. Western Electric..... 4 reels 2500 ft. each, 35¢ ft. f.o.b. LA
26 pair #19 ga. as above, but single tape armor, 1465-1400-500 ft. lengths 40¢ ft. f.o.b. LA
1 quad #18 ga. textile insulated, color coded, lead covered, 2 layers steel tape, armor jute protected. 3000 ft. one length..... 10¢ ft. f.o.b. LA
Plastic type (suitable for submarine or direct burial) 1 quad #12 ga. shielded from 12 conductors #16 ga. (2 pairs of which are suitable for telephone) other 6 conductors may be used for DC signaling, pressure alarm, battery feed, etc. single (13 strand) steel wire armor, jute protected. PVC insulated and jacketed. 3000 ft. reels (one length) weight per reel 6000 lbs. (sample on request)..... 15¢ per foot F.O.B. Salt Lake
OTHER TYPES
11 pair #19 ga. paper insulated, lead covered. Western Electric,
4—4500 ft. reels, 1, 1400—1, 1600 ft..... 15¢ ft. f.o.b. LA
7 quad #19 ga. paper insulated, lead covered..... 15¢ ft. f.o.b. LA
several sealed lengths per reel (approx. 3000 ft.)—(send for actual lengths per reel list)
7 quad #19 ga. PVC insulated, PVC covered "Superior"
4937 ft.-285 ft., 2 lengths on reel..... 20¢ ft. f.o.b. LA
37 quad #19 ga. paper insulated, lead covered, W.E., 1050 ft. (one length)..... 50¢ ft.
51 pair #19 ga. paper lead, W.E. #ENB, 890 ft. one length..... 50¢ ft.
51 pair #19 ga. +4 pair #16 ga. (shielded pairs) paper lead, 1200 ft. lengths..... 50¢ ft.
76 pair #22 ga. paper insulated lead covered, W.E., 200 ft.-200 ft.-150 ft..... 40¢ ft.
101 pair #19 ga. PVC insulated, Neoprene covered (not shielded)
1300 ft., 1 length..... 75¢ ft.
152 pair #26 ga. paper insulated lead covered, 2000 ft., one length..... 75¢ ft.
303 pair #19 ga. paper insulated, lead covered, 200 ft., one length..... $1.50 ft.
303 pair #22 ga. PVC insulated & covered, ANKOSEAL #775P
600 ft., 1000 ft. lengths..... 2.00 ft.
404 pair #26 ga. paper insulated lead covered, W.E., 2—1400 ft. lengths..... 2.00 ft.
Note: prices quoted are for lengths shown

The Telectric Co.
1218 VENICE BOULEVARD • LOS ANGELES 6, CALIF
Telephone: Richmond 8-2249

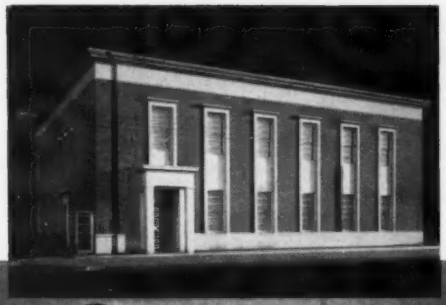
Index to ADVERTISERS

	Page
AC Spark Plug Div. of General Motors	—
Acme Visible Records, Inc.	—
ADC Incorporated	—
Airtronics International Corp.	—
Alphaduct Wire & Cable Co., The	61
Altec Lansing Corp.	—
Aluminum Company of America	—
Aluminum Ladder Co.	58
Amchem Products, Inc.	59
American Creosoting Corp.	—
American Electrical Heater Co.	—
American Steel & Wire Co.	—
American Telephone & Telegraph Co.	14-15
Anaconda Wire & Cable Co.	—
Ansonia Wire & Cable Co., The	—
Arps Corporation	—
Arrow Fastener Co., Inc.	—
Automatic Electric Sales Corp.	32-33, 56-57
Barber Advertising Specialties, Walt	62
Batlle & Co., Inc., Jos. A.	—
Bell Telephone Laboratories, Inc.	—
Benner-Nawman, Inc.	45
Berry & Co., L. M.	—
Bethlehem Steel Co.	—
Bohnsack Equipment Co.	—
Brady Co., W. H.	—
Brand, Wm.—Rex Div.	—
Buckeye Telephone & Supply Co.	64
Budelman Electronics Corp.	—
Burgess-Manning Company	—
B. Y. Dial Service	—
C&D Batteries, Inc.	—
Cabaniss-Pogue Co.	63
Cable Construction Co.	65
Cable Spinning Equipment Co.	—
Calculagraph Company	—
Carter Directory Co., Inc.	—
C & S Products, Inc.	49
Chance Co., A. B.	54
Chevrolet Div. of General Motors	—
Chicopee Mills Inc.	—
Cleveland Inst. of Electronics	—
Coates Field Service, Inc.	—
Collins Radio Co.	—
Colorado Fuel & Iron Co., The	43
Commercial Cord Company, Inc.	—
Communication Equipment & Engineering Co.	42
Comptometer Corporation	—
Cook Electric Company	—
Copperweld Steel Co.	29
Crane, Inc., Carl C.	63
Davis Construction Co.	—
Davis Mfg. Co.	—
Dial Haven, Inc.	65
Dialight Corporation	—
Diamond Expansion Bolt Co.	—
Dierks Forests, Inc.	63
Donnelley & Sons Co., R. R.	—
Duo-Safety Ladder Corp.	48
E. & C. Contracting Co.	63
Electronic Secretary Industries	—
Everstick Anchor Co.	—
Exide Industrial Div.	—
Floor-Con	—
Ford Motor Co., The	—
Gagne Enterprises, Inc.	48
General Cable Corporation	—
General Dynamics/Electronics	2-3
General Machine Products Co., Inc.	42
General Telephone Directory Co.	Back Cover
Gladwin Plastics, Inc.	—
Gould-National Batteries, Inc.	18
Graybar Electric Co.	—
Haley & Co., R. G.	—
Hallamore Electronics Co.	58
Hammond Drierite Co., W. A.	—
Harris-McBurney Company	—
Henkels & McCoy	63
Hirsch Organization, Inc., Gustav.	—
Hitachi, Ltd.	35
Holan Corp.	—
Hughey & Phillips, Inc.	62
Indiana Steel & Wire Co.	60
International Teletronics, Inc.	—
Irwin-Auger Bit Co.	—
ITT-Kellogg	8-9
Jet Line Products, Inc.	—
Johns-Manville	—
Justrite Mfg. Co.	—
Kearney Co., Jas. R.	—
Kemode Mfg. Co.	—
Kennecott Wire & Cable Div.	—
Keystone Steel & Wire Co.	—
Killoren Company	—
Klein & Sons, Mathias	37
Kohler Co.	—
Koiled Kords, Inc.	—
Koppers Co., Inc. Wood Preserving Div.	63
Kwal Paints, Inc.	—
Kwik-Mix Co.	—
Leich Sales Corporation	10-11
Lenkurt Electric Co.	6-7
Lindsay Telephone Supply Co.	—
Lorain Products Corp., The	5
Lynch Communications Systems, Inc.	—
Magnolia Chemical Co., Inc.	46
Mast Directory Co., Leland	65
McCabe-Powers Body Company	—
McGrath Engineering, Inc.	—
Midwec	—
Miller Electric Co.	—
Monsanto Chemical Co.	—
Morrison-Pelsue Co.	—
Natco Corporation	—
National-Standard Co.	—
National Telephone Supply Co.	—
Neubauer Manufacturing Co.	—
Neuses, Inc., P. K.	65
New Telephone Instr. Co.	—
Northeast Electronics Corp.	55
North Electric Company	40, 41
Nylogrip Products	—
Okonite Company, The	—
Olin Mathieson Chemical Co.	—
Onan Division, Studebaker-Packard Corp.	—
Orangeburg Mfg. Co.	—
Osborne Electronics Sales Corp.	—
Osmose Wood Preserving Co.	60
Owens-Illinois	—
Panhandle Electric Sales, Inc.	—
Parsons Company	—
Petersen Engineering, Inc.	46
Phelps Dodge Copper Products Corp.	12-13
Plastic Wire & Cable Corp.	—
Plastimayd Corporation	—
Precision Multiple Controls	—
Preformed Line Products Co.	50-51
Puregas Equipment Corp.	67
Radio Corporation of America	17
Railway Communications, Inc.	—
Ramsey Business Equip. Inc.	65
Rawlplug Company, Inc., The	—
Raytheon Company	—
Recordak Corp.	—
Reliable Electric Company	39
Republic Creosoting Company	—
Rockwell Products Corp.	—
Rolatape, Inc.	—
S & G Manufacturing Co.	—
Schauer Mfg. Co.	—
Seymour Smith & Son	—
Sherron Metallic Corp.	—
Sierra Electronics Corp.	53
Sloan, Cook & Lowe Co.	63
Southwire Co.	—
Stampings, Inc.	—
Stewart Brothers	—
Superior Cable Corporation	16
Suttle Equipment Corporation	—
T.E.I. Corp.	—
Telectric Co.	65
Tele-Muff Co.	—
Telephone Repair & Supply Co.	63
Teletek, Inc.	—
Teletype Corporation	—
Tele-Wire Supply Co., Inc.	—
Tel-Tronics Incorporated	65
Templeton, Kenly & Co.	—
Terado Company	—
Thornhill Publishing Co.	—
Tower Communications Co.	38
Transandean Associates, Inc.	—
Tudor & Yager, Inc.	63
Union Carbide Plastics Company	—
United Electric Controls Co.	—
U. S. Cable Constructors, Inc.	65
United States Independent Telephone Association	31
United States Instrument Corp.	44
United States Motors Corp.	27
United States Steel Corp. American Steel & Wire Co.	—
Utilities Contracting Corp.	65
Utility Equipment Co.	—
Utility Service Co., Inc.	47
Utility Tool & Body Co.	—
Vermeer Manufacturing Co.	—
Warren Mfg. Co., The	—
Weikel Line Company	63
Welding Service Co.	65
Western Electric Co.	—
Whitney-Blake Co.	—
Williams Inspection Co., Inc., A. W.	—
Willys Motors, Inc.	—
Wilson Plastics, Inc.	65
Winders & Geist, Inc.	—
Wiremold Co., The	—
Wyoming Valley Equipment Div.	—

WESTERN REPRESENTATIVE

McDONALD-THOMPSON

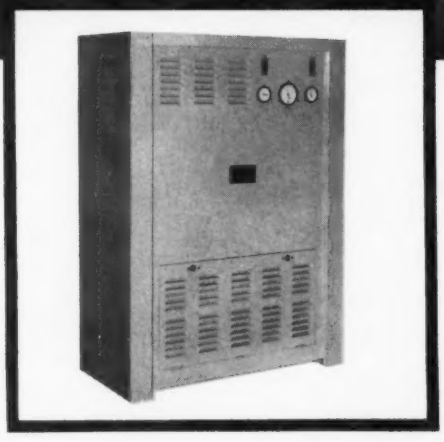
625 Market St., San Francisco, Cal.
3727 W. Sixth St., Los Angeles
620 Sherman St., Denver, Colo.
National Bldg., Seattle, Wash.
3217 Montrose Blvd., Houston, Tex.
2727 Oak Lawn Ave., Dallas 19, Tex.
2035 S. W. 58th Ave., Portland 1, Ore.



PUREGAS AIR DRYERS

at work for the Virginia Telephone & Telegraph Company

Central Virginia Distirct Plant Superintendent C. E. Payne reviews their Puregas Installation



The Virginia Telephone & Telegraph Company, serving approximately 47,000 stations in Virginia, recently completed an installation of Puregas pressurizing equipment in their Charlottesville exchange.

Virginia Telephone & Telegraph thus has become another in the growing number of independent telephone companies across the nation that are capitalizing on continuous feed pressure systems to dramatically reduce moisture-caused service troubles.

To find out how a PUREGAS Pressurizing Program can just about eliminate emergencies caused by sheath breaks and moisture damage — check-off the bulletins you would like, and send this page to us with your name and address.

☐ *Data Sheets on Model 750, 1500 and 5000 Air Dryers*
☐ *"Why Cables Should be Pressurized"*
☐ *"Desert Dry Air . . . a Boom to the Telephone Industry"*
☐ *"Cost Comparison . . . Air Dryers vs. Nitrogen"*
☐ *"Meter Panel for Continuous Feed Pressure Systems"*

Here, in brief, are a few of the advantages offered by PUREGAS Cable Pressure Systems:

- **LOWER MAINTENANCE COSTS**
- **IMPROVED CUSTOMER SERVICE**
- **PROMPT NOTICE OF SHEATH BREAKS**
- **LONGER CABLE LIFE**

PEC

PUREGAS EQUIPMENT CORP.
578 OAK STREET, COPIAGUE, N. Y.

Let our "Revenue Men" show you

THE EXTRAS THAT GO WITH INCREASED SALES!

Take a man like

Jack Mixer...

Jack is one of our "Revenue Men" in Long Beach, California.

When he graduated from high school in 1942, Jack was ready and eager to go on to college. But, as happened to many plans in those hectic years, Jack's college career had to be postponed.

Jack joined the U.S. Navy, and served six years' continuous sea duty in the Pacific theater as a radioman.

In 1948, Jack Mixer returned ashore in pursuit of his postponed college education. While earning his degree, he took on a load of spare-time work to gain business experience and pay for half of his college expenses.

After graduation in 1952, Jack joined General Telephone as a sales representative in Long Beach. In 1956, he was promoted to Sales Supervisor of a Long Beach unit.

In January of this year, Jack and his wife presented their eight-year-old son with a baby brother.

Jack Mixer is typical of the community-minded "Revenue Men" who work for General Telephone Directory Company—and for you.

You get more than extra sales when you put one of our "Revenue Men" to work on your directory.

His manners, his methods will be a positive credit to your company. He'll be welcomed by your advertisers.

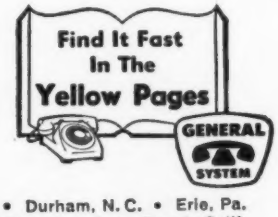
He'll work together with you to produce a book you can be proud of. A directory with complete Yellow Pages service—showing the public where to go for all kinds of purchases, rentals and services. A directory with maximum accuracy, maximum revenue.

And you won't have a worry in the world. Selling, publishing and printing are all done to perfection as part of our Complete Directory Service Plan.

Want to know more about it? A phone call or letter to our nearest office will bring a representative on the double.

GENERAL TELEPHONE DIRECTORY COMPANY

1800 Oakton Boulevard
Des Plaines, Illinois
VAnderbilt 7-6111



DIVISION OFFICES:
Bloomington, Illinois • Columbia, Mo. • Durham, N.C. • Erie, Pa. Fort Wayne, Ind. • Honolulu, H. I. • Lexington, Ky. • Long Beach, Calif. Madison, Wis. • Manila, P. I. • Muskegon, Mich. • St. Paul, Minn. San Angelo, Tex. • San Francisco, Calif. • Spokane, Wash. St. Petersburg, Fla.